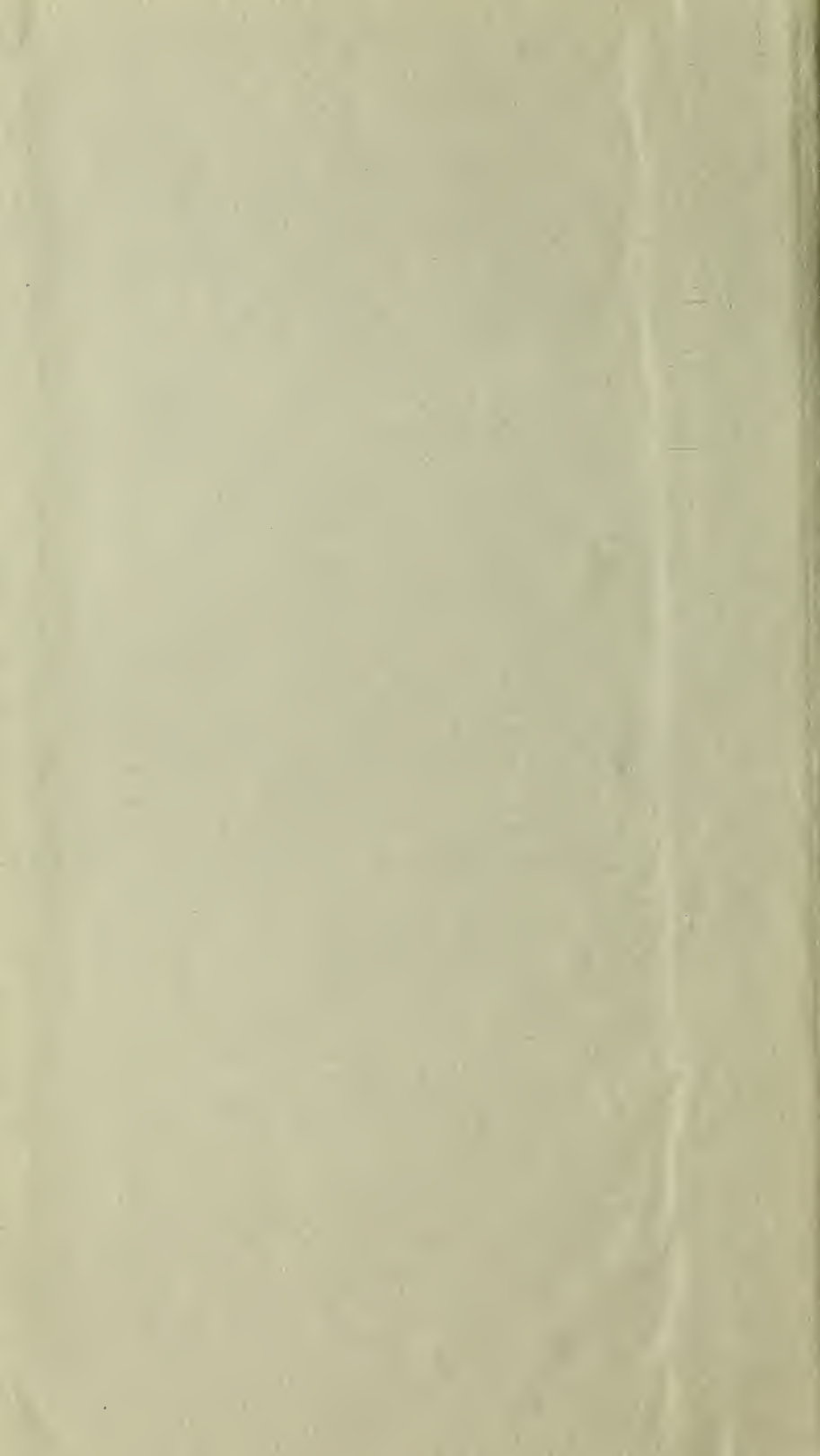


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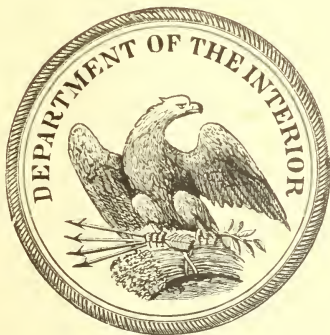
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1902





UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

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NORTH AMERICAN

GEOLOGIC FORMATION NAMES

BIBLIOGRAPHY, SYNONYMY  
AND DISTRIBUTION

BY

FRED BOUGHTON WEEKS



WASHINGTON  
GOVERNMENT PRINTING OFFICE

1902



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## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
*Washington, D. C., November 27, 1901.*

SIR: I have the honor to transmit herewith a manuscript entitled North American Geologic Formation Names: Bibliography, Synonymy, and Distribution, and to request that it be published as a bulletin of the Survey.

Very respectfully,

F. B. WEEKS.

Hon. CHARLES D. WALCOTT,  
*Director United States Geological Survey.*





# NORTH AMERICAN GEOLOGIC FORMATION NAMES: BIBLIOGRAPHY, SYNONYMY, AND DISTRIBUTION.

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By F. B. WEEKS.

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## INTRODUCTION.

This publication contains:

(1) A list of all North American sedimentary formation names, arranged alphabetically by geographic provinces under each of the larger geologic subdivisions to which they have been assigned, in general, by various authors.

(2) A list of the names used to designate a particular stratum or aggregate of sedimentary strata within the area of North America. It is arranged alphabetically, and the references to each name are placed in chronological order. Each name appears in this list as it is used in the reference cited. The references refer only to the more important descriptions of formations or discussions of correlation, synonymy, or nomenclature. The geologic time-division to which a formation belongs, and the State, Territory, or country in which it occurs, form a part of each entry.

(3) A list of the geographic names that have been applied to masses of igneous rocks occurring in North America. Only those names that indicate that the rocks are of igneous origin have been included in this list. All names of metamorphic or other rocks of uncertain origin are included in the list of sedimentary formation names.

(4) An index list of formation names.

At the inception of this work it was seen that it would be necessary to read carefully every article or book on geology that had been published in order to be certain that every name that had been used to designate particular strata should be included in this catalogue. It was evident that the necessity for an early completion of the work and the limited time that could be devoted to it rendered it impossible to adopt such a plan. Furthermore, it is well known that during the early years of geologic literature names were employed so loosely that in very many cases it is impossible to determine whether it was intended to use the name merely in a descriptive sense or as a distinctive formation name. It may happen, therefore, that names are

included in this list which were not intended to be proposed as formation names, or that the first mention of a name subsequently used as a distinctive formation name has been omitted.

This work not only presents a list of formation names, and their synonymy and correlations as given by authors, but also serves as a bibliography of the literature describing each formation. Mere mentions of occurrence were not entered, but it was intended to include descriptions of a formation which defined it either wholly or in part. It is probably true that the discrimination as to what is a sufficient description to entitle the reference to be included in this catalogue has not been of such a uniform character as it would have been if the preparation of the catalogue had been wholly the work of one person; but it is not considered less valuable on this account, since all the really important descriptions are believed to have been included.

No attempt has been made to indicate the synonymy or taxonomic value of any formation except as it was given by the author of the reference cited. It is intended to refer the investigator to the literature of any North American geologic formation name, and he must exercise his own judgment as to its value and standing as a formation name.

The work of preparing this bulletin has been in progress for nearly three years. It has been interrupted from time to time by other office and field work of the author. During the winter of 1899-1900 it became evident that this work must be completed at once for the use of members of the United States Geological Survey in assigning names to the formations which were being delineated on the folios forming the Geologic Atlas of the United States. The Director of the Survey requested the following geologists to assist in completing the work: Messrs. M. R. Campbell, N. H. Darton, J. S. Diller, G. H. Girty, C. W. Hayes, F. H. Knowlton, F. L. Ransome, G. O. Smith, A. C. Spencer, T. W. Stanton, J. A. Taff, T. W. Vaughan, and David White. The literature that then remained to be examined was apportioned among these gentlemen, and since that time the material has been brought down to January 1, 1901, by the author. The methods of preparing this material, previously adopted, were followed with as much uniformity as was possible, and the author, as well as geologists in general, is greatly indebted to these gentlemen who assisted in bringing the work to an early completion.

In the discrimination of what constitutes a sufficient description of a formation and the determination of the problems of nomenclature, the following suggestions are offered. These represent, in brief, the conclusions of the author as the result of his studies of the geologic literature of North America.

A formation which is associated with other strata at the particular locality from which it takes its name should be defined, either by its

lithologic or its faunal characters, in such a manner that the reader, or the observer in the field, can differentiate it from the other strata with which it occurs. Where a name is given to a series of strata of varied lithologic character and of wide distribution, the general characters of the lithologic variations and the stratigraphic relations should be so given as to indicate, approximately, what are its relations to other formations of the same or related provinces.

In determining the names to be applied to formations the laws of priority and prescription (general usage) should be observed. The name first given to a definite formation or series of strata should hold, unless this name is superseded in literature by another which has come into general use. In the latter case the first name should be dropped for this formation; and, where there can be no question as to the general usage of the subsequent name, the first name might be used again for a different formation without causing serious trouble. Such reuse would certainly be very advantageous in regions where there are few geographic names.

As an illustration, the name Berkshire limestone was first applied to certain limestones in western Massachusetts. Subsequently the name Stockbridge limestone was employed to designate this formation and has since come into general usage for this subdivision of the Cambrian in that region. The name Berkshire limestone has therefore become obsolete, and the name might be used to designate some other formation without creating confusion.

The duplication of formation names has become a serious matter, as will be seen from an examination of this list. It seems very desirable that in the future there should be no further duplication; new names should replace those which can not hold their present varied definitions; thus in time all the present discrepancies in the nomenclature of formations would disappear from geologic literature.

It is the intention of the writer to continue this list in the yearly publication, *Bibliography and Index of North American Geology*, etc., under the subheading, "Geologic formations described."

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SYNONYMIC TABLE OF PERIOD NAMES USED BY AUTHORS AND THOSE  
USED BY THE UNITED STATES GEOLOGICAL SURVEY.

Names used by authors.		United States Geological Survey classification.	
Glacial .....	}	Pleistocene.	
Quaternary .....			
Pleistocene .....			
Tertiary {	Pliocene .....	}	Neocene.
	Miocene .....		
	Oligocene .....	}	Eocene.
	Eocene .....		
Cretaceous .....		Cretaceous.	
Jura .....	}	}	Juratrias.
Trias .....			
Permian .....	}	}	Carboniferous.
Carboniferous .....			
Devonian .....		Devonian.	
Silurian .....	}	}	Silurian.
Ordovician .....			
Cambrian .....		Cambrian.	
Algonkian .....		Algonkian.	
Archean .....		Archean.	



# LIST OF GEOLOGIC FORMATION NAMES, ARRANGED BY GEOGRAPHIC PROVINCES UNDER THE GEOLOGIC PERIODS TO WHICH THEY HAVE BEEN ASSIGNED.

## PLEISTOCENE.

### *Alaska.*

Cook Inlet.  
Ground Ice.  
Kanektok.  
Kowak.  
Kuskokwim.  
Pinnacle.  
St. Elias.  
Saskatchewan.  
Togiak.  
Yukon.

### *Appalachian region.*

Teay.

### *Atlantic Coast region.*

Barnstable.  
Barrington.  
Bryn Mawr.  
Cape May.  
Columbia.  
Cornfield Harbor.  
Jamesburg.  
Middleboro.  
Mohegan.  
Mussel-bearing.  
Packer.  
Philadelphia.  
Queens River.  
Sankaty.  
Simmons Bluff.  
Terrace.  
Tisbury.  
Truro.  
Yellow.

### *Canada.*

Galt.  
Leda.  
Kingston.

Saugeen.  
Saxicava.  
Syrtensian.  
Toronto.

### *Great Lakes region.*

Albertan.  
Algoma.  
Arkona.  
Artemisia.  
Calumet Beach.  
Gary.  
Grassmere.  
Mesabi.  
Van Wert.  
Wisconsin.

### *Great Plains region.*

Antelope.  
Cache Valley.  
Equus.  
Gentile Valley.  
Kansan.  
Lake Bonneville.  
Malade Valley.  
Marsh Creek.  
McPherson.  
Meade.  
Megalonyx.  
Salt Creek.  
Third Moraine.  
Wellington.

### *Gulf States.*

Biloxi.  
Mobile.  
Port Hudson.

### *Mississippi Valley.*

Aftonian.  
Altamont.  
Bluff.  
Bottom Prairie.  
Boulder.  
Buchanan.  
Cerro Gordo.  
Delta.  
Forest.  
Fourth Moraine.  
Gravel.  
Highland.  
Illinoian.  
Iowan.  
Iroquois.  
Itasca.  
Loess.  
Marseilles.  
Orange Sand.  
Peorian.  
Sangamon.  
Shelbyville.  
Silveria.  
Tolleston.  
Valley.  
Valparaiso.  
Vernilion.  
Western Valley.  
Yarmouth.

### *Pacific Coast region.*

Admiralty.  
Coos.  
Douty.  
Gale.  
Midland.  
Orting.



## PLEISTOCENE—continued.

Osceola.	<i>Southwestern region.</i>	Champlain.
Puyallup.	Coast.	Coastal.
San Pedro.	Guertie.	Falmouth.
Steilacoom.	Leóna.	May Pen.
Superjacent.	Prairie d' Ane.	Montego.
Tehachipa.	Seymour.	Neudeckian.
Vashon.	White Prairie d' Ane.	Ozarkian.
Yakutat.		Warren.
<i>Rocky Mountain region.</i>	<i>West Indies.</i>	Zapata.
Hot Spring.	Barbican.	
Sheridan.	Bogue Island.	
Stanford.	Buff Bay.	

## TERTIARY.

<i>Alaska.</i>	Bryn Mawr.	Shell Bluff.
Hayes River.	Caloosahatchie.	Squanjum.
Kenai.	Cape Cod.	Tusahoma.
Nulato.	Carolinian.	Vineyard.
Nushagak.	Chattahoochee.	Virginian.
Orca.	Chesapeake.	Waccamaw.
Palisades.	Cooper River.	Weyquosque.
Pinnacle.	Coralline.	Wilmington.
Saskatchewan.	Croatan.	Woodstock.
Tanana.	Duplin.	Yellow.
Tok.	Eo-Lignitic.	
Twelvemile.	Floridian.	<i>Canada.</i>
Tyonek.	Glassboro.	Carmanah Point.
Unga.	Gray.	Coldwater.
Yakutat.	Great Carolina.	Lawrencian.
Yentna.	Hawthorne.	Leda.
<i>Appalachian region.</i>	Holocene.	Roche Percee.
Flatwoods.	Jacksonboro.	Saxicava.
Hickman.	Lafayette.	Sooke.
Irvine.	Lisbon.	Tranquille.
<i>Atlantic Coast region.</i>	Manatee.	
Alachua.	Marl.	<i>Central America.</i>
Altamaha.	Marlborough.	Brito.
Alum Bluff.	Marylandinian.	
Appomattox.	Mont Alto.	<i>Great Basin region.</i>
Aquia Creek.	Mount Holly.	Amyzon.
Archer.	Nashaquitsa.	Bishop Mt.
Ashley.	Orangeburg.	Bitter Creek
Aspalaga.	Pamunkey.	Bridger.
Autocene.	Patuxent.	Cache Lake.
Beacon Hill.	Pensauken.	Esmerelda.
Branditown.	Piscataway.	Estuary.
Brandon.	Pulaski.	Fort Bridger.
	Santee.	Green River.
	Shark River.	



## TERTIARY—continued.

Humboldt.	Jacksonian.	Yegua.
Idaho.	Jacksonville.	Zeuglodon.
Manti.	Lagarto.	
Para.	Lignite.	<i>Hawaii.</i>
Pink Cliff.	Lignitic.	Pearl River.
Plant.	Lufkin.	
Salt Lake.	Marine.	<i>Mexico.</i>
Tower.	Matthews Landing.	Baucari.
Truckee.	Middleton.	Coatzacoalcas.
Uinta.	Midway.	Trincheras.
White.	Midwayan.	
	Miliolite.	<i>Mississippi Valley.</i>
<i>Great Lakes region.</i>	Moody's Branch.	Bloomfield.
Vermilion.	Mount Selman.	Bluff.
	Myrick.	Geneva.
<i>Great Plains region.</i>	Naheola.	La Grange.
Equus.	Nanafalia.	Mansfield.
Kingsdown.	Navasota.	Orangesand.
McPherson.	Nummulite.	Port Hudson.
Megalonyx.	Oak Grove.	Porters Creek.
Nebraska.	Oakville.	Portland.
Pearlette.	Ocala.	Quitman-Muerto.
Protoceras.	Ocheesee.	
White River.	Orbitoides.	<i>Pacific Coast region.</i>
	Orbitoitic.	Arago.
<i>Greenland.</i>	Orbitolite.	Asphalto.
Atane.	Orthaulax.	Astoria.
	Ostrea sellaeformis.	Aturia.
<i>Gulf States.</i>	Palo Duro.	Auriferous.
Arcadia.	Pascagoula.	Bituminous.
Bashi.	Peace Creek.	Carmelo.
Bells Landing.	Queen City.	Carrizo Creek.
Black Bluff.	Reynosa.	Chehalis.
Buhrstone.	Sabine River.	Chico.
Chickasaw.	Shiloh.	Coaledo.
Chipola.	Sophophy.	Contra Costa.
Claiborne.	Sparta.	Ellensburg.
Clayton.	St. Stephens.	Empire.
Coal Bluff.	Sucarnochee.	Ione.
Cocksfield Ferry.	Tallahatta.	John Day.
Coral.	Tampa.	Johnson.
De Soto.	Timber Belt.	Kettleman.
Diablo-Davis.	Tule.	Kittitas.
Ephora.	Uvalde.	Little Vein.
Fayette.	Vicksburg.	Merced.
Fleming.	Vicksburgian.	Miohippus.
Frio.	Waldo.	Mojave.
Grand Gulf.	Walnut.	Monterey.
Greensand.	Webb Bluff.	Mytilus.
Greggs Landing.	Wills Point.	Oakland.
Hatchetigbee.	Woods Bluff.	Ocoya Creek.
Jackson.		

## TERTIARY—continued.

Paso Robles.	Florissant.	Bingen.
Pescadero.	Fort Ellis.	Blanco.
Puget.	Fort Union.	Blanco Canyon.
San Diego.	Galisteo.	Camden.
San Pablo.	High Park.	Cleveland County.
Santa Clara.	Huerfano.	Cooks Mountain.
Sespe.	Intermediate.	Fort Selden.
Similkameen.	Judith River.	Hueco.
Superjacent.	Laramie.	Lapara.
Swauk.	Loup Fork.	Llano Estacado.
Tassagara.	Loup River.	Marks Mills.
Tejon.	Monument Creek.	Plateau.
Ticholeptus.	North Park.	White Bluff.
Torregon.	Nussbaum.	
Tunnel Point.	Oreodon.	<i>West Indies.</i>
Tuscan.	Payette.	Antiguan.
Tyre.	Pinon.	Bowdan.
Roslyn.	Pliohippus.	Cambridge.
Umpqua.	Poison Canyon.	Caroni.
Wallala.	Potosi rhyolite series.	Catadupa.
Wilbur.	Procamelus.	Chapelton.
Wildcat.	Puerco.	Cobra.

*Rocky Mountain region.*

Alnwick.	Santa Fe.	Lincoln.
Arapahoe.	Smith River.	Manchionell.
Bates Hole.	Sphinx.	Manzanilla.
Bozeman.	Sweetwater.	Maruga.
Brontotherium.	Titanotherium.	Matanzas.
Brown.	Wahsatch.	May Pen.
Browns Park.	Washakie.	Moneague.
Canyon.	West Elk.	Moruga.
Canyon City.	Wind River.	Naparima.
Coryphoden.	Wyoming.	Nariva.
Cripple Creek.		Oceanic.
Cuchara.	<i>Southwestern region.</i>	Parian.
Deep River.	Arkadelphia.	Pepino.
Denver.	Basal.	Porus.

CRETACEOUS.

<i>Alaska.</i>	Lisbon.	Hazlet.
Holikunk.	Marietta.	Island.
Kolmakof.		James River.
Matanuska.	<i>Atlantic Coast region.</i>	Lincoln.
Mission Creek.	Albirupean.	Magothy.
Oklune.	Amboy.	Manasquan.
Orca.	Aquia Creek.	Marl.
Tordrillo.	Baltimorean.	Matawan.
<i>Appalachian region.</i>	Clay.	Monmouth.
Brownstown.	Eutaw.	Mount Vernon.
Eagle.	Fish House.	Navesink.

## CRETACEOUS—continued.

Patapsco.  
 Pedee.  
 Potomac.  
 Potters.  
 Rancocas.  
 Rappahannock.  
 Raritan.  
 Redbank.  
 Sand Hill.  
 Sassafras River.  
 Severn.  
 Sewell.  
 Vincentown.  
 Woodbridge.

*Canada.*

Belly River.  
 Clearwater.  
 Crosswicks.  
 Dunvegan.  
 Edmonton.  
 Fort St. John.  
 Grand Rapids.  
 Jackass Mountain.  
 Komooks.  
 Kootanie.  
 La Biche.  
 Loon River.  
 Nanaimo.  
 Nicollet.  
 Odanah.  
 Paskapoo.  
 Pelican.  
 Porcupine.  
 Queen Charlotte.  
 Quesnel River.  
 St. Marys.  
 Smoky River.  
 Tar.  
 Wapiti.  
 Willow Creek.

*Great Basin region.*

Bear River.  
 Black Butte.  
 Bluegate.  
 Golden Wall.  
 Henry's Fork  
 Hogback.  
 Masuk.

Salt Wells.  
 Sulphur.  
 Tu-nunk.

*Great Plains region*

Arickaree.  
 Bad Land.  
 Barrett.  
 Belvidere.  
 Benton.  
 Beulah.  
 Black Hill.  
 Blue Cut.  
 Blue Hill.  
 Champion.  
 Cheyenne.  
 Corral.  
 Downs.  
 Elk Creek.  
 Fence-post.  
 Fort Hays.  
 Fort Pierre.  
 Fort Union.  
 Fullington.  
 Greenleaf.  
 Hay Creek.  
 Kiowa.  
 Kirby.  
 Lanphier.  
 Medicine.  
 Mentor.  
 Neocomian.  
 Oak Creek.  
 Osborne.  
 Platte.  
 Reeder.  
 Smoky Hill.  
 Stokes.  
 Trego.  
 Victoria.

*Greenland.*

Atane.  
 Kome.  
 Patooi.

*Gulf States.*

Arenaceous group.  
 Arietna.  
 Bayou Chicot.  
 Calcareous.  
 Coffee sand.

Prairie Bluff.  
 Ripley.  
 Tombigbee.  
 Tuscaloosa.  
 Winfield.

*Mexico.*

Cantera.  
 Timpas.  
 Todos Santos.

*Mississippi Valley.*

Fort Dodge.  
 Glauconitic.  
 Green sand.  
 Inoceramus.  
 Nishuabotany.  
 Rockville.  
 Rotten.  
 Woodbury.

*Pacific Coast region.*

Chico.  
 Chico-Tejon.  
 Foraminiferal.  
 Franciscan.  
 Golden Gate.  
 Horsetown.  
 Knoxville.  
 Mesa.  
 Myrtle.  
 Puget.  
 Radiolarian.  
 San Francisco.  
 Shasta.  
 Shasta-Chico.  
 Similkameen.  
 Suisure.  
 Superjacent.  
 Tejon.  
 Whitsett.  
 Winthrop.

*Rocky Mountain region.*

Animas River.  
 Apishapa.  
 Arapahoe.  
 Bull Mountain.  
 Canyon City.  
 Carlile.  
 Cascade.  
 Ceratops.

## CRETACEOUS—continued.

Colorado.	Caprina.	Navarro.
Cretaceous Nos. 1, 2, 3.	Caprotina.	Nerinea.
Dakota.	Chalky.	North Denison.
Estuary.	Choctaw.	Paluxy.
Fort Benton.	Clark County.	Paw Paw.
Fox Hills.	Comanche.	Pinto.
Graneros.	Comanche Peak.	Ponderosa.
Great Falls.	Comet Creek.	Preston.
Green Mountain.	Coquina.	Pulliam.
Greenhorn.	Dallas.	Quitman.
Halymenites.	Danville.	Red River.
Laramie.	Delrio.	Requienia.
Livingston.	Denison.	Richland-Gordon.
Mancos.	Dexter.	Rocky Comfort.
Mesa Verde.	Dinosaur.	Shoal Creek.
Middle Park.	Duck Creek.	Taylor.
Montana.	Eagle Ford.	Texana.
Niobrara.	Eagle Pass.	Texanan.
Ohio Creek.	Edwards.	Timber Creek.
Pictured Cliff.	Escondido.	Travis Peak.
Pierre.	Etholen.	Trinity.
Piñon Mesa.	Exogyra arietina.	Tucumcari.
Point of Rocks.	Exogyra costata.	Upson.
Pteranodon.	Exogyra ponderosa.	Val Verde.
Puerco.	Flag.	Vicarya.
Ruby.	Fort Worth.	Vola.
Saliferous.	Fredericksburg.	Walnut.
San Miguel.	Georgetown.	Washita.
Trinidad.	Gillespie.	Webberville.
Yellowstone.	Glen Rose.	Yucca.
	Goodland.	
<i>Southwestern region.</i>	Goodnight.	<i>West Indies.</i>
	Grand Prairie.	
Anacacho.	Grayson.	Ballard.
Anoma.	Gulf.	Blue Mountain.
Austin.	Kiamitia.	Frankenfield.
Big Decipher.	Lower Cross Timbers.	Jerusalem.
Black Prairie.	Main Street.	Logie Green.
Bosque.	Malone.	Minbo.
Buda.	Marl Brook Columbus.	Yallahs.

## JURATRIAS.

<i>Alaska</i>	Boscabel.	Long Meadow
Naknek.	Brunswick.	Mount Toby.
Skwentna.	Chesterfield.	New Red.
Terra Cotta.	Chicopee.	Newark.
	Connecticut River.	Otterdale.
<i>Atlantic Coast region</i>	Granby.	Patuxent.
Albirupian.	Gwynedd.	Perkasie.
Arundel.	Lansdale.	Pleurocoelus.
Baltimorean.	Lockatong.	Potomac.

JURATRIAS—continued.

Pottstown.	<i>Pacific Coast region.</i>	Como.
Red sand rock.	Auriferous slate.	Dolores.
Seneca.	Bicknell.	Ellis.
Stockton.	Cedar.	Gunnison.
Sugarloaf.	Foreman.	La Plata.
Trap Tuff.	Franciscan.	McElmo.
Tuckahoe.	Golden Gate.	Meekoceras.
Vinita.	Hardgrave.	Morrison.
<i>Canada.</i>	Hinchman.	Pentacrinus.
Nicola.	Hosselkus.	Red.
Vancouver.	Mariposa.	Shirley.
	Milton.	Sundance.
<i>Great Basin region.</i>	Mineral King.	Teton.
Flaming Gorge.	Monte de Oro.	Unkpaps.
Gray Cliff.	Mormon.	Wingate.
Koipato.	Pitt.	Wyoming.
Shinarump.	Radiolarian.	Zuni.
Star Peak.	Sailor Canyon.	<i>Southwestern region.</i>
Vermilion.	Santa Anna.	Bend.
<i>Mexico.</i>	Swearingen.	Dockum.
Barranca.	Thompson.	Lista Blanca.
	Trail.	Malone.
<i>Mississippi Valley.</i>	<i>Rocky Mountain region.</i>	Norristown.
Merom.	Atlantosaurus.	
	Baptanodon.	

PERMIAN.

<i>Appalachian region.</i>	Cottonwood.	Kiger.
Dunkard Creek.	Curzon.	Kingfisher.
<i>Great Plains region.</i>	Day Creek.	Manhattan.
Abilene.	Dog Creek.	Marietta.
Alma.	Double Mountain.	Marion.
Amphitheatre.	Dry Bone.	Medicine Lodge.
Big Basin.	Flint.	Neosho.
Big Blue.	Flint Hill.	Red Bluff.
Browntown.	Flower-pot.	Salt Fork.
Cave Creek.	Forest City.	Salt Plain.
Cedar Hills.	Fort Riley.	Shimer.
Chapman.	Geronimo.	Sumner.
Chase.	Geuda.	Taloga.
Cimarron.	Glass Mountain.	Wellington.
Clear Fork.	Harpers.	Wichita.
	Jenkins.	Wreford.

CARBONIFEROUS.

<i>Alaska.</i>	<i>Appalachian region.</i>	Anthracite.
Cape Beaufort.	Alleghany River.	Bakerstown.
Tachatna.	Alton.	Bangor.
Tahkandit.	Ames.	Barren.
Wellesley.	Anderson.	Barton.

## CARBONIFEROUS—continued.

Bayard.	Cuyahoga.	Madisonville.
Bearwallow.	Dismal.	Mahoning.
Beaver River.	Dotson.	Marvin Creek.
Bedford.	Eagle.	Massilon.
Bee Spring.	Elk Lick.	Mauch Chunk.
Bellton.	Elk River.	Maxville.
Benezette.	Elkgarden.	Meadeville.
Berea.	Erie.	Mercer.
Big Clifty.	Ewuing.	Middle Conglomerate.
Big Injun.	Fairfax.	Mill Creek.
Black Hand.	Fayette.	Millstone.
Blacksville.	Federal Creek.	Monongahela River.
Blackwater.	Ferriferous.	Morgantown.
Birmingham.	Fish Creek.	Mount Morris.
Bluefield.	Fishpot.	Mount Pleasant.
Bluestone.	Flint Ridge.	Mount Sand.
Bolivar.	Floyd.	Mountain.
Bonair.	Fort Payne.	New River.
Bradford.	Freeport.	Newman.
Braxton.	Frostburg.	Newtonville.
Breathitt.	Gallitzen.	Nineveh.
Briceville.	Garland.	Norton.
Broad Top.	Gilmore.	Oil Creek Lake.
Browntown.	Gladeville.	Oil Lake.
Brush Creek.	Great.	Olean.
Buffalo.	Great Conglomerate.	Olive.
Buhr.	Green County.	Orangeville.
Butler.	Greenbrier.	Oxmoor.
Cairo.	Griswold Gap.	Panther Creek.
Cambridge.	Harlan.	Pennington.
Canaan.	Hartselle.	Pennsylvanian.
Canal.	Hinton.	Pickens.
Cannelton.	Homewood.	Pine Creek.
Caseyville.	Horsepen.	Pine Mountain.
Cassville.	Iowa.	Pithole.
Charleston.	Irondale.	Pittsburg.
Clarion.	Johnson River.	Pocahontas.
Clark.	Johnstown.	Pocono.
Clarksburg.	Jollytown.	Pomeroy.
Cleveland.	Kanawha.	Ponent.
Coal measures.	Kanawha Falls.	Pottsville.
Colvins Run.	Kinzua.	Powelton.
Conemaugh.	Kittanning.	Price.
Conglomerate.	Lauderdale.	Princeton.
Connellsville.	Lee.	Productive.
Connoquenessing.	Lehigh.	Pulaski.
Corbin.	Leitchfield.	Putnam Hill.
Corry.	Licking.	Quakertown.
Crawford.	Logan.	Quinnemont.
Crinoidal.	Lookout.	Raccoon.
Curiew.	Lower Green.	Raleigh.
Cussewago.	Macksburg.	Redstone.

CARBONIFEROUS—continued.

Riceville.	Conamicut.	<i>Great Lakes region.</i>
Royal.	Cranston.	Coldwater.
Rushville.	Kingstown.	Grand Rapids.
Saltsburg.	Millers River.	Marshall.
Sand Mountain.	Natick.	Michigan salt.
Savage.	Pawtucket.	Napoleon.
Schreyfogels.	Pelham.	Parma.
Scott.	Pondville.	Richmondville.
Scotts Creek.	Purgaton.	Rock Falls.
Sequoyah.	Rose Island.	Woodville.
Seral.	Roxbury.	
Sewanee.	Sachuest.	<i>Great Plains region.</i>
Sewell.	Sockanosset.	
Sewickley.	Sukonk.	Altoona.
Sharon.	Tennile River.	Americus.
Sharpsville.	Tiverton.	Atchison.
Shawnee.	Wamsutta.	Auburn.
Shenango.		Bethany Falls.
Shinersville.	<i>Canada.</i>	Burlingame.
Siliceous.	Albert.	Calhoun.
South Carrolton.	Banff.	Carlyle.
Subconglomerate.	Bonaventure.	Cave.
Sunbury.	Cache Creek.	Cave Rock.
Tar Spring.	Campbell Creek.	Cave Spring.
Tellowa.	Cape John.	Chanute.
Tonesta.	Cascade.	Chase.
Trough Creek.	Hopewell.	Cherryvale.
Tuscumbia.	Marble Canyon.	Cottonwood.
Unbral.	Mertgomist.	Cottonwood Falls.
Uniontown.	New Glasgow.	Deer Creek.
Upshur.	Perry.	Douglas.
Vanport.	Pictou.	Dover.
Venango.	Portland.	Dun.
Verdi.	Riversdale.	Dunlap.
Vespertine.	Smalls Brook.	Earlton.
Valden.	Smelt Brook.	Einstine.
Vartburg.	Stellarton.	Elgin.
Vashington County.	Union.	Elk Falls.
Vaverly.	Windsor.	Elmont.
Vaynesburg.	Woodstock.	Emporia.
Velch.		Falls River.
White.	<i>Great Basin region.</i>	Florence.
Wildcat Mountain.	Aubrey.	Fort Scott.
Windy Gap.	Godiva.	Garnett.
Vise.	Diamond Peak.	Gypsum.
Wyoming Valley.	Humbug.	Hartford.
Woar.	Lodore.	Howard.
	Mammoth.	Iola.
	Red Wall.	Labette.
	Wahsatch.	Lane.
	Weber.	Le Compton.
		Le Roy.
<i>New England.</i>		
Aquidneck.		
Attleboro.		
Coasters Harbor Island.		



## CARBONIFEROUS—continued.

Marion.	Clepsydrops.	North Vernon.
Marionton.	Collinsville.	Orange Martin.
Maryville.	Concretionary.	Nodaway.
Neodesha.	Cooper.	Parkville.
Oread.	Coxville.	Pella.
Osage.	Cypress.	Platte.
Osage City.	Dekalb.	Plattsmouth.
Oswego.	Earlham.	Pottery.
Ottawa.	Encrinital.	Productal.
Pawnee.	English River.	Quarry Creek.
Plattsburg.	Ferruginous.	Quitman.
Pleasanton.	Forbes.	Redrock.
Pottawatomie.	Fragmental.	Rhomboida..
Robinett.	Fusulina.	Riverside.
Rossville.	Geode.	Rock Creek.
Sea Urchin.	Goniatite.	Rockcastle.
Severy.	Grand River.	Rockford.
Shunganunga.	Graydon.	St. Genevieve.
Silver Lake.	Graydon Springs.	St. Joe.
Soldier Creek.	Hanging Rock.	St. Louis.
Spring Rock.	Hannibal.	Salem.
Stanton.	Harrodsburg.	Spring River.
Strong.	Henrietta.	Springvale.
Swallow.	High Rock.	Summit.
Syntrialasina.	Jonesboro.	Thomas Hill.
Tecumseh.	Kansas City.	Unionville.
Thayer.	Kaskaskia.	Warrensburg.
Topeka.	Keokuk.	Warsaw.
Toronto.	Keosauqua.	Wassonville.
Victoria.	Kinderhook.	West Franklin.
Vilas.	Knob.	Westerville.
Wabaunsee.	Knobstone.	Weston.
Wakarusa.	Lady Washington.	Winterset.
Well Rock.	Lagonda.	Wyckoff.
Willard.	Lawrence.	
Winfield.	Lawrence-Crawford.	
	Le Grand.	<i>Pacific Coast region.</i>
	Lithographic.	Baird.
	Livingston.	Bed Rock.
	Louisiana.	Blue Canyon.
	Macon City.	Calaveras.
	Mansfield.	Cape Horn.
	Maple Hill.	Clipper Gap.
	Marais des Cygnes.	Delhi.
	Marshalltown.	Eureka.
	Merom.	Little Grizzly Creek.
	Miller.	McCloud.
	Mississippian.	Martinez.
	Missouri.	Pitt.
	Missourian.	Relief.
	Mitchell.	Robinson.
	Moberly.	Shoo Fly.
	Monroe-Harrison.	
	Mound Valley.	<i>Rocky Mountain region.</i>
		Arkansas.
		Badito.

*Mississippi Valley.*

Anvil Rock.  
 Appanoose.  
 Archimedes.  
 Ardmore.  
 Augusta.  
 Aux Vases.  
 Baden.  
 Bevier.  
 Bituminous.  
 Burlington.  
 Carlinville.  
 Chaelites.  
 Chariton.  
 Cherokee.  
 Chester.  
 Chouteau.



## CARBONIFEROUS—continued.

Blue.	Burnet Branch.	McAlester.
Castle.	Camp Colorado.	Milburn.
Eryops.	Camp Creek.	Milburn-Strawn.
Fountain.	Canpophyllum.	Norristown.
Hermosa.	Canyon.	Novaculite.
Kibbey.	Carrollton.	Paint Rock.
Leadville.	Cavaniol.	Parks Mountain.
Madison.	Cedarton.	Pawhuski.
Maroon.	Chaffin.	Pentremital.
Millsap.	Cherry.	Poteau.
Monarch.	Cisco.	Richland.
Otter.	Coleman.	Ricker.
Otter Creek.	Coon Mountain.	Rochelle.
Paine.	Cottonwood Creek	Rough Creek.
Quadrant.	Cross Plains.	Russellville.
Rico.	Elliott Creek.	Saddle Creek.
Wood River.	Elm Creek.	Santa Anna.
Woodhurst.	Fayetteville.	Savanna.
	Fox Ford.	Sebastian.
	Frickham.	Shadrick Mill.
	Genevieve.	Shoal Creek.
	Granville.	Spadra.
	Grape Creek.	Speck Mountain.
	Greenwood.	Spring Creek.
	Hanna Valley.	Stockwether.
	Hartshorne.	Strawn.
	Hartwell.	Sylamore.
	Hog Creek.	Talpa.
	Home Creek.	Thurman.
	Hordes Creek.	Tomlinson.
	Horse Creek.	Valera Bend.
	Indian Creek.	Waldrip.
	Jagger Bend.	Washburn.
	Kessler.	Washington.
	Lolm.	Watts Creek.
	Lost Creek.	Wilbarger Creek.
	Lynch Creek.	Wyman.

## DEVONIAN.

<i>Alaska.</i>	Cadent.	Columbus.
Tachatna.	Camden.	Corniferous.
Tahkandit.	Cardiola.	Cuboides.
Wellesley.	Cascade.	Delaware.
West Fork.	Cashaqua.	Dellville.
	Catskill.	Dorset.
<i>Appalachian region.</i>	Cauda-Galli.	Elk.
Allegrippus.	Chapman.	Elk Mountair
Beecraft.	Chattanooga.	Ellicottsville.
Bellvale.	Chautauquan.	Encrinal.
Bernardston.	Chemung.	Erian.
Black shale.	Cherry Ridge.	Erie.
Blossburg.	Cleveland.	Esopus.
Burlington.	Coeymans.	Falls Creek.

## DEVONIAN—continued.

Flagstone.	Seneca.	Grand Tower.
Frog Mountain.	Senecan.	Grassy Creek.
Gardeau.	Sherburne.	Gyroceras.
Genesee.	Skaneateles.	Hackberry.
Girard.	Skunnemunk.	Hannibal.
Grainger.	Stafford.	Huron.
Great Bend.	Starucca.	Independence.
Green Pond.	Stony Brook.	Kenwood.
Hamilton.	Stormville.	Kinderhook.
Helderberg.	Styliolina.	King.
Helderbergian.	Sweetland.	Lime Creek.
Honesdale.	Tentaculite.	Louisian.
Hosmer.	Towanda.	Louisville-Delphi.
Ithaca.	Tully.	Montpelier.
Jennings.	Tuna.	New Albany.
Kimberling.	Ulsterian.	New Providence.
Kings Mill.	Venango.	North Vernon.
Lackawaxen.	Vergent.	Otis.
Leboeuf.	West Jefferson.	Phelps.
Little Genesee	Wolf Creek.	Riverside.
Louisville.		Rockford.
Ludlowville.	<i>Canada.</i>	Sac.
McKean.	Bloomsbury.	Sellersburg.
Manlius.	Gaspé.	Shelby.
Marcellus.	Intermediate.	Snyder Creek.
Monteballo.	Kingston.	Spirifera pennata.
Monterey.	Lambton.	State Quarry.
Montrose.	Little River.	Sylamore.
Moscow.	Manitoban.	Vernicular.
Mount Pleasant.	Mispec.	Walker Block.
Naples.	Winnipegogan.	Wapsipinicon.
New Milford.	<i>Great Basin region</i>	Warren.
New Scotland.	Nevada.	
Nunda.	Ogden.	<i>New England.</i>
Ohio.	Temple Butte.	Moose Island.
Old Red.	White Pine.	Moose River.
Olentangy.		Newport.
Oneonta.	<i>Great Lakes region.</i>	Paupack.
Onondaga.	Dundee.	<i>Pacific Coast region.</i>
Oriskany.	Little Traverse Bay.	Arlington.
Panama.	St. Clair.	Kennett.
Panola.	Thunder Bay.	Sacramento.
Perry.	Traverse.	
Peru.		<i>Rocky Mountain region.</i>
Ponent.	<i>Mississippi Valley.</i>	Jefferson.
Portage.	Brown.	Monarch.
Postmedial.	Bunker Hill.	Ouray.
Romney.	Callaway.	Parting.
Salamanca.	Cedar Valley.	Three Forks.
Sandusky.	Clear Creek.	
Schoharie.	Davenport.	<i>Southwestern region.</i>
Scioto.	Delphi.	Eureka.
Selinsgrove.	Fayette.	

SILURIAN.

*Appalachian region.*

Athens.  
Barree.  
Bastard.  
Bays.  
Beavertown.  
Bloomfield.  
Bloomsburg.  
Blue.  
Blue Shell.  
Bossardville.  
Bridgeport.  
Cacapon.  
Cedarville.  
Clarkes Mill.  
Cliff.  
Clinch.  
Clinch Mountain.  
Clinton.  
Cove.  
Crab Orchard.  
Cumberland.  
Damourite.  
Dayton.  
Decker Ferry.  
Delthyris.  
Dyestone.  
Garrard.  
Giles.  
Grand Rapids.  
Green Pond.  
Hampshire.  
Hancock.  
Harpeth.  
Helderberg.  
Highbridge.  
Hillsboro.  
Holland.  
Hydraulic.  
Juniata.  
Levant.  
Lewistown.  
Lexington.  
Longwood.  
Lowville.  
McCoytown.  
Manlius.  
Massanutten.  
Medina.  
Meniscus.  
Meridian.

Mifflintown.  
Moccasin.  
Monclova.  
Monterey.  
Montgomery.  
Neeleytown.  
Niagara.  
Niagaran.  
Oneida.  
Onondaga.  
Oswegan.  
Oswego.  
Panola.  
Pentamerus.  
Postmeridian.  
Poxono Island.  
Pre-Meridian.  
Primedial.  
Proteau.  
Red Mountain.  
Rensselaer.  
Rockwood.  
Rondout.  
Salina.  
Salmon River.  
Scalent.  
Sentella.  
Shawangunk.  
Siliceous.  
Sneedville.  
Springfield.  
Stormville.  
Surgent.  
Taylors Ridge.  
Tellico.  
Tuscarora.  
Tymochtee.  
Waldron.  
Waterlime.  
West Union.  
White Oak Mountain.

*Canada.*

Anticosti.  
Arisaig.  
Bertie.  
Cayuga.  
Cobequid.  
Gaspe.  
Guelph.  
Halysites.  
Mascarene.

*Great Basin region.*

Eureka.  
Lone Mountain.

*Great Lakes region.*

Byron.  
Coralline.  
Gray.  
Mayville.  
Monroe.  
Racine.  
Sylvania.  
Waukesha.

*Mississippi Valley.*

Anamosa.  
Bertram.  
Bowling Green.  
Cape Girardeau.  
Clear Creek.  
Coggan.  
Coral.  
Glencoe.  
Gower.  
Grand Tower.  
Joliet.  
Laurel.  
Le Claire.  
Noix.  
Osgood.

*New England.*

Amherst.  
Aroostook.  
Ashland.  
Bellowspipe.  
Brimfield.  
Cobscook.  
Greylock.  
Sheridan.  
Vinal Haven.  
Whitmores Ferry.

*Pacific Coast region.*

Grizzly.  
Taylorsville.

*Rocky Mountain region.*

Parting.  
White.  
Yule.

## SILURIAN—continued.

*Southwestern region.*

Beaver.  
Burnet.  
Cason.  
Deep Creek.

Glens Falls.  
Hinton.  
Hoover.  
Izard.  
Leon.

St. Clair.  
San Saba.  
Wyo.

## ORDOVICIAN.

*Appalachian region.*

Auroral.  
Avondale.  
Barnegate.  
Beekmantown.  
Belfast.  
Berkshire.  
Bird Mountain.  
Birdseye.  
Black River.  
Calceiferous.  
Canadian.  
Capitol.  
Carters Creek.  
Central.  
Champlain.  
Chazy.  
Chester Valley.  
Chickamauga.  
Cincinnati.  
Codorus.  
College Hill.  
Conasauga.  
Dayton.  
Eolian.  
Everett.  
Flanagan.  
Fossiliferous.  
Frankfort.  
Glade.  
Hudson.  
Hudson River.  
Inwood.  
Isle Lamotte.  
Kentucky.  
Knox.  
Lancaster.  
Lebanon.  
Lenoir.  
Lorraine.  
Manhattan.  
Martinsburg.  
Matinal.  
Moduria.  
Mohawk.

Mohawkian.  
Nashville.  
Normandy.  
Ontarian.  
Ontario.  
Ontario.  
Peach Bottom.  
Pelham.  
Pierce.  
Point Pleasant.  
Ridley.  
Rochdale.  
Rockmart.  
Sevier.  
Shenandoah.  
Siliceous.  
Sparry.  
Stones River.  
Trenton.  
Utica.  
Wappinger Valley.  
Westfield.  
Whateley.  
Winchester.

Elevator.  
Jordan.  
Lake Superior.  
St. Croix.  
St. Lawrence.  
St. Peters.

*Mississippi Valley.*

Beloit.  
Bryant.  
Buff.  
Buffalo.  
Cap-au-Grès.  
Charette.  
Crystal.  
Folley.  
Galena.  
Girardeau.  
Joachim.  
McCum.  
Magnesian.  
Maquoketa.  
Marble.  
Marble Hill.  
Receptaculites.  
Richmond.  
St. François.  
St. Thomas.  
Sandstone.  
Shakopee.  
Thebes.  
Willow River.  
Wykoff.

*Canada.*

Cat Head.  
Citadel.  
Farnham.  
Lauzon.  
Levis.  
Marsouin.  
Mottled.  
Phillipsburg.  
Quebec.  
St. Jean.  
Winnipeg.

*New England.*

Canaan.  
Chester.  
Conway.  
Egremont.  
Goshen.  
Granville.  
Hardwick.  
Hawley.  
Hoosac.

*Great Basin region.*

Pogonip.  
Ute.

*Great Lakes region.*

Bluff.  
Eastern.

## ORDOVICIAN—continued.

	<i>Rocky Mountain region.</i>	<i>Southwestern region.</i>
Leyden.		
Riga.	Fremont.	Macluria.
Rowe.	Harding.	Polk Bayou.
Savoy.	Madison.	Rainy Mountain.
Mount Washington.	Manitou.	Saccharoidal.
Waterville.		St. Clair.

## CAMBRIAN.

<i>Appalachian region.</i>		
Aldrich.	Unicoi.	Keweenawan.
Antietam.	Wallkill.	Lake Superior.
Apison.	Wappinger Valley.	Mendota.
Ashley Hill.	Weisner.	<i>Mississippi Valley.</i>
Beaver.	Weverton.	
Chikis.	Wiltons Run.	Cole Camp.
Chilhowee.	York.	Crystal City.
Chiques.		Dresbach.
Cochran.	<i>Canada.</i>	Elevator B.
Cohutta.	Acadian.	Fredericktown.
Coosa.	Adams Lake.	Gasconade.
Deer Creek.	Athabasca.	Grand Portage.
Graysonton.	Barachois.	Gritstone.
Hampton.	Belle Isle.	Hinckley.
Hardistonville.	Bow River.	Jordan.
Harpers.	Bretonian.	La Motte.
Harpers Ferry.	Castle Mountain.	Le Seur.
Hellem.	Churchill.	Moreau.
Hesse.	Copper-bearing.	New Richmond.
Honaker.	Etcheminian.	Pipestone.
Kentucky.	Johannian.	Pokegama.
Knox.	Kaninistiquia.	Potosi.
Loudon.	Nisconlith.	Proctor.
Maryville.	Phillipsburg.	Puckwunge.
Montevallo.	Pointe Levis.	Roubidoux.
Murray.	Quebec.	St. Croix.
Nebo.	St. John.	St. François.
Nichols.	Selkirk.	St. Joseph.
Nolichucky.	Sillery.	St. Lawrence.
North Valley Hill.		Waswangoning.
Oostanala.	<i>Great Basin region.</i>	Western.
Potsdam.	Hamburg.	White River.
Primal.	Prospect Mountain.	
Reading.	Secret Canyon.	<i>New England.</i>
Rogersville.	Tintic.	Becket.
Rome.	Tonto.	Berkshire.
Russell.		Cheshire.
Rutledge.	<i>Great Lakes region.</i>	Coos.
Sandsuck.	Eastern.	Dalton.
Shenandoah.	Eau Claire.	Eolian.
South Valley Hill.	Fond du Lac.	Georgia.
Starr.	Hermansville.	Granular.
		Kendall Green.
		Lincoln.

## CAMBRIAN—continued.

Lingua.	Taconic.	Park.
Little Compton.	Taconyte.	Pilgrim.
Monson.	Vermont.	Sawatch.
Nahant.	Winooski.	Yogo.
Newport Neck.		
Pelham.	<i>Rocky Mountain region.</i>	<i>Southwestern region.</i>
Poughquag.	Barker.	Blue Creek.
Quartzrock.	Dry Creek.	Hickory.
St. Albans.	Flathead.	Katenicy.
Stockbridge.	Gallatin.	Ozark.
Stony Brook.	Meagher.	Riley.
Swiftwater.		

## ALGONKIAN.

<i>Appalachian region.</i>	Bone Lake.	<i>New England.</i>
Catoctin.	Chippewa.	Ashton.
Citico.	Clarksburg.	Blackstone.
Courtland.	Eastern.	Coles Brook.
Edison.	Felch Mountain.	Cumberland.
Franklin.	Goodrich.	East Lee.
Hamburg Mountain.	Groveland.	Goose Pond.
Hazel.	Hanbury.	Hinsdale.
Hemlock.	Ishpeming.	Hop Brook.
Losee Pond.	Kona.	Kearsarge.
Manhattan.	Mansfield.	Mendon.
Monroe.	Maquethian.	Merrimack.
Pigeon.	Marquette.	Mount Holly.
Sandpond.	Marquette-Menominee.	Rockingham.
Taconic.	Marquettian.	Smithfield.
Talladega.	Menominee.	Stamford.
Thunderhead.	Mesnard.	Tyringham.
Wilhite.	Michigamme.	Washington.
	Mount Mesnard.	White Mountain.
<i>Canada.</i>	Negaunee.	
Anorthosite.	Ogishke.	<i>Rocky Mountain region.</i>
Aspidella.	Penokee.	Belt.
Avalon.	Penokee-Gogebic.	Chamberlin.
Conception.	Quartz slate.	Cherry Creek.
Huronian.	Randville.	Empire.
Kaministiquia.	St. Louis.	Greyson.
Kingston.	Siamo.	Helena.
Momable.	Stuntz.	Marsh.
Ontarian.	Sturgeon.	Neihart.
Random.	Thompson.	Newland.
Signal Hill.	Vulcan.	Salida.
Thessalon.	Wewe.	Sheridan.
Torbay.		Spokane.
	<i>Great Basin region.</i>	
<i>Great Lakes region.</i>	Chuar.	
Ajibik.	Grand Canyon.	<i>Southwestern region.</i>
Antoine.	Unkar.	Llano.
Baraboo.	Vishnu.	Mason.
Bijiki.		Packsaddle.
Black River Falls.	<i>Mississippi Valley.</i>	Texan.
Bohemia.	Pilot Knob.	Texian.
	Sioux.	

## ARCHEAN.

*Appalachian region.*

Broad Branch.  
Chestnut Hill.  
Highland.  
Manayunk.  
Orchard.  
Piedmont.  
Pochuck.  
South Mountain.

*Canada.*

Arvonian.  
Atic Oban.  
Coast.  
Coastal.  
Coldbrook.  
Coutchiching.  
Dore.  
Grenville.  
Hastings.  
Huronian.  
Kingston.  
Laurentian.  
Norian.  
Quesnel Lake.  
Shuswap.  
Steep Rock.

*Great Lakes region.*

Animikie.  
Clover Canyon.  
Glacian.  
Holyoke.  
Kewatin.  
Keweenawan.  
Keweenawian.  
Kewenan.  
Kitchi.  
Mareniscan.  
Minnesota River Valley.  
Mona.  
Necedah.  
Ophian.  
Palmer.  
Pelodian.  
Porphyrian.  
Portland.  
Quinnesec.  
Republic.  
Siderian.  
Vermilion.  
Waterloo.

*Mexico.*

Volcan.

*New England.*

Atlantic.  
Franconia.  
Greylock.  
Labrador.  
Labradorian.  
Lake Winnepesaukee.  
Lisbon.  
Lyman.  
Montalban.  
Pemigewassett.  
Pequawket.  
Terranovan.  
Worcester.

*Southwestern region.*

Bodeville.  
Burnetan.  
Click.  
Fernandan.  
Long Grove.  
Long Mountain.  
Iron Mountain.  
Valley Spring.

## FORMATIONS OF UNDETERMINED AGE.

*Alaska.*

Bettles.  
Birch Creek.  
Bristol Bay.  
Cantwell.  
Copper River.  
Fortymile.  
Greenstone.  
Klondike.  
McCarthy Creek.  
Nasina.  
Nilkoka.  
Nutzotin.  
Rampart.  
Rapids.  
Shushitna.  
Sunrise.  
Tanana.  
Valdes.

*Appalachian region.*

Bridgeton.  
Buncombe.

Cades.  
Cherokee slates.  
Clingman.  
Cockeysville.  
Conshohocken.  
Cortlandt.  
Eaton.  
Fairmount.  
Frankford.  
Kennett.  
Kings Mountain.  
Linnville.  
Moose Hide.  
New York.  
Ocoee.  
Oswegatchie.  
Peach Bottom.  
Pope Hollow.  
Setters.  
Yonkers.

*Canada.*

Anderson River.  
Boston Bar.

Caribou.  
George River.  
Hunker.  
Indian River.  
Manitonnuck.  
Menevian.  
Mott Haven.  
Nechacco.  
Nipigon.  
Sault St. Mary.

*Great Basin region.*

Arizonian.  
Mesa.  
Red Creek.

*Great Lakes region.*

Cupriferous.  
L'Anse.  
Logan.  
Mackinac.  
New Uhn.



## FORMATIONS OF UNDETERMINED AGE—continued.

Pewabic.	Pine Creek.	Phipsburg.
Point aux Gres.	Putnamville.	Schooner Head.
Trappean.	St. Anthony.	Suttons Island.
<i>Mississippi Valley.</i>	Sedalia.	Swanton.
Brownsville.	Williamsport.	Taunton.
Cannelton.	<i>New England.</i>	Winnepesaukee.
Flat Rock.	Bar Harbor.	<i>Pacific Coast region.</i>
Fort Knox.	Bartletts Island.	Tolenas.
Geneva.	Blanford.	Ventura.
Golconda.	Bolton.	<i>Rocky Mountain region.</i>
Grandad.	Calderwood Neck.	Minnelusa.
Greensburg.	Cambridge.	Nampa.
Harris City.	Chitistone.	<i>Southwestern region.</i>
Hawpatch.	Chloritic.	Plymouth.
Hindustan.	Cranberry Island.	Polk County.
Huntingdon.	Greenwich.	<i>West Indies.</i>
Lake Huron.	Klutena.	Caribbean.
Lamont.	Kotlo.	
Lost River.	Lake.	
Pendleton.	Mapleton.	



## SEDIMENTARY FORMATION NAMES.

- Abilene** conglomerate, Haworth. Kan. Univ. Geol. Surv., vol. i, p. 186. 1896.  
Permian. Kansas.
- Acadian**, Dawson. Am. Assoc. Adv. Sci., vol. xvi, pp. 117-119. 1867.  
New Brunswick.
- Acadian, Dawson. Acadian Geology, 2d ed., London, p. 638. 1868.  
New Brunswick. Exact syn. St. John group.
- Acadian, Smith. Ala. Geol. Surv., Rept. for 1875, p. 127. 1876.  
Cambrian. Alabama.
- Acadian group, Miller. Cin. Soc. Nat. Hist., Jour., vol. iv, p. 271. 1881.
- Acadian series, Matthew. Am. Geol., vol. ii, p. 3. 1888.  
Cambrian. Canada.
- Acadian, Walcott. U. S. Geol. Surv. Bull., No. 81, p. 248. 1891.  
Cambrian. New Brunswick.
- Adams Branch** limestone, Drake. Texas Geol. Surv., 4th Ann. Rept., p. 391.  
1893.  
Carboniferous. Texas. Included in Canyon division.
- Adams Lake** series, Dawson. Can. Geol. Surv., new ser., vol. iv, pp. 29B, 31B.  
1890.  
British Columbia.
- Adams Lake, Dawson. Geol. Soc. Am., Bull., vol. ii, p. 169. 1891.  
Cambrian? British Columbia.
- Adams Lake, Dawson. Can. Geol. Surv., new ser., vol. vii, pp. 26B, 30B, 33B.  
1896.  
Cambrian or Cambro-Silurian. British Columbia.
- Admiralty** clay, Willis. Geol. Soc. Am., Bull., vol. ix, p. 157. 1898.  
Pleistocene. Washington. Included in Admiralty epoch.
- Admiralty till, Willis and Smith. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No.  
54. 1899.  
Pleistocene. Washington.
- Aftonian**, Chamberlin. Jour. of Geol., vol. iii, pp. 272-273. 1895.  
Pleistocene. Included in Glacial epoch.
- Aftonian stage, Upham. Am. Geol., vol. xvi, p. 103. 1895.  
Pleistocene. Exact syn. Helvetian.
- Aftonian, Chamberlin. Jour. of Geol., vol. iv, pp. 872-876. 1896.  
Pleistocene. Mississippi Valley.
- Aftonian epoch, Todd. Mo. Geol. Surv., vol. x, p. 213. 1896.  
Pleistocene. Missouri.
- Aftonian, Beyer. Iowa Geol. Surv., vol. vii, pp. 231-232. 1897.  
Pleistocene. Iowa.
- Aftonian, Norton. Iowa Geol. Surv., vol. ix, p. 474. 1899.  
Pleistocene. Iowa.

- Ajibik** quartzite, Van Hise and Bayley. U. S. Geol. Surv., 15th Ann. Rept., p. 540. 1895.  
Algonkian. Lake Superior region. Included in Lower Marquette series.
- Ajibik** quartzite, Smyth. U. S. Geol. Surv., 15th Ann. Rept., p. 610. 1895.  
Algonkian. Lake Superior region. Included in Lower Marquette series.
- Ajibik** quartzite, Smyth. U. S. Geol. Surv., Mon., vol. xxviii, pp. 528-529. 1897.  
Algonkian. Michigan. Included in Lower Marquette series.
- Ajibik** quartzite, Van Hise. U. S. Geol. Surv., Mon., vol. xxviii, pp. 282-313. 1897.  
Algonkian. Michigan. Included in Lower Marquette series.
- Alachua** clay, Dall and Harris. U. S. Geol. Surv., Bull., No. 84, p. 127. 1892.  
Tertiary. Florida. Included in Pliocene.
- Alachua** clay, Dall. Wagner Free Inst., Trans., vol. iv, pp. xi-xiv. 1896.  
Florida.
- Albany** division, Cummins. Texas Geol. Surv., 2d Ann. Rept., p. 395. 1891.  
Carboniferous. Texas.
- Albany** division, Drake. Texas Geol. Surv., 4th Ann. Rept., pp. 421-429. 1893.  
Carboniferous. Texas. Includes Paint Rock, Talpa, Grape Creek, No. 12, Bead Mountain, Valera, Jagger Bend, No. 8, Elm Creek, Coleman, No. 5, Indian Creek, Hordes Creek, Lost Creek, and Coleman Junction beds.
- Albert** shales, Hind. Geol. of New Brunswick, p. 85. 1865.  
Carboniferous. New Brunswick.
- Albert** shales, Bailey. Can. Geol. Surv., Rept. 1876-77, pp. 356-371; 386-388. 1878.  
Carboniferous. New Brunswick. Included in Lower Carboniferous. Exact syn. Baltimore shales.
- Albert** shales, Bailey, Matthew, and Ells. Can. Geol. Surv., Rept. 1878-79, pp. 16D-19D. 1879.  
Carboniferous. New Brunswick. Included in Lower Carboniferous.
- Albertan** formation, Dawson. Jour. of Geol., vol. iii, pp. 507-511. 1895.  
Pleistocene. British Columbia.
- Albertan** stage, Dawson. Geol. Soc. Am., Bull., vol. vii, p. 45. 1895.  
Pleistocene. Alberta, Canada.
- Albertan**, Chamberlin. Jour. of Geol., vol. iv, pp. 872-876. 1896.  
Pleistocene. Alberta, Canada.
- Albertan** drift, Leverett. Chicago Acad. Sci., Bull. II of Geol. and Nat. Hist. Survey, p. 13. 1897.  
Great Lakes region. Included in Pleistocene.
- Albirupear**, Uhler. Am. Phil. Soc., Proc., vol. xxv, p. 42. 1888.  
Jurassic? Maryland.
- Albirupear**, Uhler. Md. Acad. of Sci., Trans., vol. i, p. 45. 1889.  
Cretaceous. Maryland.
- Albirupear**, Clark. Johns Hopkins Univ. Circulars, vol. ix, p. 69, and vol. x, pp. 105-108. 1890.  
Mesozoic. Virginia-Maryland.
- Albirupear**, Darton. Geol. Soc. Am., Bull., vol. ii, p. 436. 1891.  
Cretaceous. Maryland.
- Albirupear**, Uhler. Md. Acad. of Sci., Trans., vol. i, pp. 185-201. 1892.  
Cretaceous. Maryland. Part. Syn. Potomac.
- Albirupear** series, Ward. U. S. Geol. Surv., 15th Ann. Rept., p. 332. 1895.  
Cretaceous. Maryland. Included in Potomac.
- Aldrich** limestone, McCally. Ala. Geol. Surv., Rept. on Valley Regions, pt. ii, pp. 41-42; 692-712, 767. 1897.  
Cambrian. Alabama. Exact Syn. Beaver limestone.
- Algoma** sand, Logan. Can. Geol. Surv., Rept. 1843-63, pp. 887, 907-908. 1863.  
Pleistocene. Canada.

- Allegheny** series, Rogers. Pa. State Geol., 4th Ann. Rept., p. 177. 1840.  
Carboniferous. Pennsylvania. Exact Syn. Lower Coal Measures.
- Allegheny River** series, Stevenson. Am. Phil. Soc., Trans., vol. xv, pp. 27-30. 1873.  
Carboniferous. West Virginia. Includes Mahoning sandstone.
- Allegheny River Coal Measures**, Ashburner. Am. Phil. Soc., Proc., vol. xvi, pp. 519, 534. 1877.  
Carboniferous. Pennsylvania. Includes Mahoning sandstone. Exact Syn. Lower Productive Measures.
- Allegheny River** series, D'Inwilliers. 2d Pa. Geol. Surv., Ann. Rept., 1886, pp. 79-81 1887.  
Carboniferous. Pennsylvania. Exact Syn. Lower Productive Measures.
- Allegheny River** series, White. U. S. Geol. Surv., Bull., No. 65, p. 99. 1891.  
Carboniferous. Ohio, Pennsylvania, West Virginia. Included in Lower Coal Measures. Includes Upper Freeport limestone and sandstone, Bolivar fire clay, Lower Freeport limestone and sandstone, Johnstown (cement) limestone, Kittanning fire clay and sandstone, Ferriferous limestone, and Eagle limestone.
- Allegheny River** series, D'Inwilliers. 2d Pa. Geol. Surv., Final Rept., vol. 3, pt. ii, pp. 2155-2405. 1895.  
Carboniferous. Pennsylvania. Exact Syn. No. xiii, Lower Productive Measures.
- Allegheny River coal** series, White. W. Va. Geol. Surv., vol. i, p. 202. 1899.  
Carboniferous. West Virginia.
- Allegheny** series, White. Geol. Soc. Am., Bull., vol. xi, pp. 147-157. 1900.  
Carboniferous. Pennsylvania. Includes Clarion group, Kittanning group and Freeport group.
- Allegheny formation**, O'Harra. Md. Geol. Surv., Allegany County, p. 115. 1900.  
Carboniferous. Maryland.
- Allegrippus** conglomerate, White. 2d Pa. Geol. Surv., Rept. T<sup>3</sup>, pp. 99-100. 1885.  
Devonian. Pennsylvania. Included in Chemung.
- Allegrippus** conglomerate, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 1554-1556. 1892.  
Devonian. Pennsylvania. Included in Chemung. Exact syn. Chemung lower conglomerate.
- Alma** limestone, Prosser. Geol. Soc. Am., Bull., vol. vi, p. 44. 1894.  
Permian. Kansas. Included in Cottonwood formation.
- Alnwick** lake beds, Cross. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 7. 1894. Eocene. Colorado.
- Altamaha** grit, Dall. Wagner Free Inst. Sci., Trans., vol. iii, pt. ii, p. 209. 1892.  
Miocene. Georgia. Included in Miocene (Chesapeake epoch). Part. syn. Grand Gulf group.
- Altamaha** grit, Dall and Harris. U. S. Geol. Surv., Bull., No. 84, p. 81. 1892.  
Tertiary. Georgia.
- Altamaha** grit, Dall and Stanley-Brown. Geol. Soc. Am., Bull., vol. v, p. 164. 1894.  
Tertiary. Florida.
- Altamont** moraine, Todd. U. S. Geol. Surv., Bull., No. 144, p. 13. 1896.  
Pleistocene. Dakotas. Exact Syn. First or Outer Moraine.
- Altamont** limestone, Adams. Kan. Univ. Geol. Surv., vol. i, p. 22, 1896.  
Carboniferous. Kansas.
- Altamont** moraine, Beyer. Iowa Geol. Surv., vol. vii, p. 239, 1897.  
Pleistocene. Iowa.
- Altamont** limestone, Haworth. Kan. Univ. Geol. Surv., vol. iii, pp. 6, 92, 94, 100. 1898.  
Carboniferous. Kansas. Included in Manhattan formation.
- Altamont** moraine, Todd. U. S. Geol. Surv., Bull., No. 158, pp. 18-41. 1899.  
Pleistocene. South Dakota. Exact Syn. First or Outer Moraine.

- Altamont moraine, Wilder. Iowa Geol. Surv., vol. x, p. 132. 1900.  
Pleistocene. Iowa.
- Alton** group, Ashburner. 2d Pa. Geol. Surv., Rept. R<sup>2</sup>, pp. 367-373. 1885.  
Carboniferous. Pennsylvania.
- Alton coal group, D'Invilliers. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. i, p. 1876. 1895.  
Carboniferous. Pennsylvania. Included in No. xii, Pottsville conglomerate.
- Altoona** limestone, Haworth and Piatt. Kan. Univ. Quart., vol. ii, p. 117. 1894.  
Carboniferous. Kansas. Exact Syn. Erie limestone.
- Alum Bluff** series, Langdon. Ga. Geol. Surv., 1st Rept. of Prog., p. 97. 1891.  
Tertiary. Georgia.
- Alum Bluff series, Spencer. Ga. Geol. Surv., 1st Rept. of Prog., pp. 57, 97. 1891.  
Tertiary. Georgia. Included in Miocene.
- Alum Bluff beds, Dall and Harris. U. S. Geol. Surv., Bull., No. 84, p. 122. 1892.  
Tertiary. Florida.
- Alum Bluff beds, Dall and Stanley-Brown. Geol. Soc. Am., Bull., vol. v, pp. 147, 165. 1894.  
Tertiary. Florida. Included in Miocene.
- Amboy** clays, Hollick. Geol. Soc. Am., Bull., vol. vii, p. 14. 1895.  
Cretaceous. New Jersey. Part. Syn. Albirupean.
- Amboy clay, Newberry. U. S. Geol. Surv., Mon., vol. xxvi, p. 21. 1895.  
Cretaceous. New Jersey.
- Amboy clay, Hollick. Am. Assoc. Adv. Sci., Proc., vol. xlvii, p. 293. 1898.  
Cretaceous. New Jersey. New England.
- Americus** limestone, Kirk. Kan. Univ. Geol. Surv., vol. i, pp. 80-81. 1896.  
Carboniferous. Kansas.
- Ames** limestone, Andrews. Ohio Geol. Surv., vol. i, pt. i, pp. 235, 296. 1873.  
Carboniferous. Ohio. Included in Coal Measures.
- Ames limestone, Lovejoy. Ohio Geol. Surv., vol. vi, pp. 631, 632. 1888.  
Carboniferous. Ohio.
- Amherst** feldspathic mica-schist, Emerson. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 50. 1898.  
Silurian. Massachusetts.
- Amphitheater** dolomite, Cragin. Am. Geol., vol. xix, p. 358. 1897.  
Permian. Kansas. Oklahoma. Included in Dog Creek formation of Cimarron series.
- Amyzon** beds, Clark. U. S. Geol. Surv., Bull., No. 83, p. 141. 1891.  
Tertiary. Interior region.
- Amyzon group, Dall and Harris. U. S. Geol. Surv., Bull., No. 84, p. 281. 1892.  
Tertiary. Oregon.
- Amyzon shales, Scott. Geol. Soc. Am., Bull., vol. ix, p. 404. 1898.  
Tertiary. Nevada. Included in Oligocene.
- Amyzon formation, Smith. Jour. of Geol., vol. viii, pp. 454-455. 1900.  
Tertiary. Western North America. Included in Eocene.
- Anacacho** formation, Hill and Vaughan. U. S. Geol. Surv., 18th Ann. Rept., pt. p. 240. 1898.  
Cretaceous. Texas. Included in Montana division of Gulf series.
- Anacacho formation, Vaughan. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 6. 1900.  
Cretaceous. Texas. Included in Gulf series.
- Anamosa** beds, Norton. Iowa Geol. Surv., vol. iv, pp. 130-135. 1895.  
Silurian. Iowa. Included in Upper Silurian. Exact Syn. Mount Vernon be-

- Anamosa stage, Calvin. Iowa Geol. Surv., vol. v, pp. 56-60. 1896.  
 Silurian. Iowa. Included in Niagara series.
- Anamosa limestone, Calvin. Iowa Geol. Surv., vol. vii, pp. 55-57. 1897.  
 Silurian. Iowa. Included in Niagara.
- Anamosa stone, Norton. Iowa Geol. Surv., vol. ix, p. 424. 1899.  
 Silurian. Iowa. Included in Gower stage.
- Anderson** sandstone, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 33. 1896.  
 Carboniferous. Tennessee.
- Anderson sandstone, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 40. 1897.  
 Carboniferous. Tennessee.
- Anderson River** group, Selwyn. Can. Geol. Surv., Rept. 1871-72, pp. 62-63. 1872.  
 British Columbia. Exact Syn. Boston Bar group.
- Animas River** beds, Cross. U. S. Geol. Surv., Mon., vol. xxvii, p. 217. 1896.  
 Cretaceous. Colorado. Included in Post Laramie. Exact Syn. Denver.
- Animikie**, Irving. U. S. Geol. Surv., 3d Ann. Rept., pp. 165, 166. 1883.  
 Archean. Michigan. Included in Huronian.
- Animikie group, Irving. Science, vol. i, pp. 140, 360. 1883.  
 Huronian.
- Animikie formation, McKellar. Can. Roy. Soc., Trans., vol. v, sec. iv, pp. 63-73. 1888.  
 Archean. Canada.
- Animikie, Winchell. Am. Geol., vol. i, pp. 14-24. 1888.  
 Archean. Minnesota.
- Animikie series, Winchell. Minn. Geol. and Nat. Hist. Surv., 16th Ann. Rept., pp. 352-360. 1888.  
 Huronian. Minnesota.
- Animikie, Lawson. Geol. Soc. Am., Bull., vol. i, p. 164. 1889.  
 Algonkian? Canada.
- Animikie, Van Hise. U. S. Geol. Surv., 10th Ann. Rept., p. 402. 1890.  
 Algonkian. Wisconsin, Minnesota. Exact syn. Penokie.
- Animikie series, Van Hise. Int. Cong. of Geol., 5th Session, pl. xiv. 1893.  
 Algonkian. Lake Superior Region. Included in Huronian.
- Animikie series, Spurr. Minn. Geol. and Nat. Hist. Surv., Bull., No. 10, p. 3. 1894.  
 Minnesota.
- Animikie, McInnes. Can. Geol. Surv., new ser., vol. x, pp. 23II-24II. 1898.  
 Ontario.
- Animikie, Walcott. Geol. Soc. Am., Bull., vol. x, p. 222. 1899.  
 Algonkian. Included in Upper Huronian. Part. Syns. Marquette, Kaministiquia, Penokee, Gogebic, Chippewa, and Baraboo.
- Animikie, Grant. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iv, pp. 180, 323, 417, 456, 484, 493. 1899.  
 Cambrian. Minnesota.
- Animikie, Winchell. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iv, pp. 296, 374. 1899.  
 Cambrian. Minnesota. Included in Taconic.
- Animikie, Winchell. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. v, p. 46. 1900.  
 Cambrian. Minnesota.
- Anoma** chalk, Hill. Geol. Soc. Am., Bull., vol. v, p. 308. 1894.  
 Cretaceous. Indian Territory.
- Anorthosite** series, Adams. Jour. of Geol., vol. i, pp. 332-335. 1898.  
 Algonkian. Canada.



- Antelope** moraine, Todd. U. S. Geol. Surv., Bull., No. 144, pp. 11, 45. 1896.  
Pleistocene. North and South Dakota. Exact Syn. Third moraine.
- Antelope Creek** bed, Drake. Texas Geol. Surv., 4th Ann. Rept., pp. 385-386. 1893.  
Carboniferous. Texas. Included in Strawn division.
- Anthracite** formation, Zachariah. Am. Jour. Sci., 1st ser., vol. iv, pp. 1-8. 1821.  
Carboniferous. Pennsylvania. Includes Lehigh Coal.
- Anthracite Coal Measures**, Rogers. Pa. State Geol., 2d Ann. Rept., pp. 71-79. 1838.  
Carboniferous. Pennsylvania. Exact Syn. No. xiii.
- Anticosti** group, Logan. Can. Geol. Surv., Rept., 1843-1863, pp. 298-344. 1863.  
Silurian. Canada. Included in Middle Silurian. Includes Oneida conglomerate,  
Medina sandstone, Clinton group, and Niagara group.
- Anticosti** group, Miller. Cin. Soc. Nat. Hist., Jour., vol. iv, No. iv, p. 268. 1881.  
Silurian.
- Anticosti** group, Foerste. Denison Univ. Sci. Lab., Bull., vol. iii, p. 9. 1888.  
Canada.
- Antietam** sandstone, Williams and Clark. Maryland: Its Resources, Industries,  
and Institutions, p. 68. 1893.  
Cambrian. Maryland.
- Antietam** sandstone, Keith. U. S. Geol. Surv., 14th Ann. Rept., pt. ii, pp. 335-337.  
1894.  
Cambrian. Virginia, Maryland.
- Antietam** sandstone, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 10.  
1894.  
Cambrian. Virginia, Maryland, and West Virginia.
- Antietam** formation, Clark. Md. Geol. Surv., vol. i, pp. 157, 178. 1897.  
Cambrian. Maryland.
- Antiguan** marls, Vaughan. Science, new ser., vol. xii, pp. 873-875. 1900.  
Tertiary. Georgia. Part. Syn. Chattahoochee limestone.
- Antoine** dolomite, Van Hise. U. S. Geol. Surv., 19th Ann. Rept., pt. iii, p. 16.  
1899.  
Algonkian. Michigan. Included in Lower Menominee.
- Anvil Rock** sandstone, Owen. Ky. Geol. Surv., vol. i, pp. 29-78. 1856.  
Carboniferous. Kentucky. Included in Lower Coal Measures.
- Anvil Rock** sandstone, Lesquereux. Geol. Reconm. Indiana, Rept., 1859-60, p. 308.  
1862.  
Carboniferous. Indiana.
- Anvil Rock** sandstone, Lesquereux. Ill. Geol. Surv., vol. i, pp. 213, 217, 232. 1866.  
Carboniferous. Illinois. Included in Coal Measures.
- Anvil Rock** sandstone, Cox. Indiana Geol. Surv., 1st Ann. Rept. for 1869, p. 18. 1869.  
Carboniferous. Indiana. Exact Syn. Mahoning sandstone.
- Anvil Rock**, Collett. Indiana Dept. Geol. and Nat. Hist., 13th Ann. Rept. for 1883.  
p. 9, 49. 1884.  
Carboniferous. Indiana.
- Apishapa** formation, Gilbert. U. S. Geol. Surv., 17th Ann. Rept., pt. ii, p. 567.  
1896.  
Cretaceous. Colorado. Included in Niobrara group.
- Apishapa** formation, Hills. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 58,  
1899.  
Cretaceous. Colorado. Included in Niobrara.
- Apishapa** formation, Hills. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 68.  
1900.  
Cretaceous. Colorado. Included in Niobrara formation.
- Apison** shale, Hayes. U. S. Geol. Surv., Geol. Atlas of U. S., Folios 2, 4, 6, 20. 1894-95.  
Cambrian, Georgia, Tennessee.

- Apison shale, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 16. 1895.  
Cambrian. Tennessee, North Carolina.
- Appanoose** beds, Bain. Iowa Geol. Surv., vol. v, pp. 378-394. 1896.  
Carboniferous. Iowa. Included in Des Moines stage.
- Appanoose, Bain and Leonard. Geol. Soc. Am., Bull., vol. x, p. 11. 1899.  
Carboniferous. Iowa. Included in Upper Carboniferous.
- Appleton** stage, Stevenson. N. Y. Acad. Sci., Trans., vol. xv, p. 51. 1896.  
Carboniferous. Arkansas. Includes Crossplains sandstone, Russellville shale, Washburne sandstones.
- Appomattox** formation, McGee. Am. Jour. Sci., 3d ser., vol. xxxv, pp. 328-330. 1888.  
Tertiary. Virginia.
- Appomattox formation, McGee. Am. Jour. Sci., 3d ser., vol. xl, pp. 15-41. 1890.  
Tertiary. Atlantic Coastal Plain.
- Appomattox, Darton. Geol. Soc. Am., Bull., vol. ii, p. 432. 1891.  
Tertiary. Virginia, Maryland.
- Aquia Creek** series, Ward. U. S. Geol. Surv., 15th Ann. Rept., p. 326. 1895.  
Cretaceous. Maryland, Virginia. Included in Potomac.
- Aquia Creek, Clark. U. S. Geol. Surv., Bull., No. 141, pp. 54, 57. 1896.  
Tertiary. Virginia. Included in Eocene.
- Aquia Creek stage, Clark. Am. Jour. Sci., 4th ser., vol. i, pp. 369, 370. 1896.  
Tertiary. Virginia. Included in Eocene (Pamunkey formation). Part. Syn.  
Middle or Upper Lignitic (p. 374).
- Aquidneck** shales, Shaler, Woodworth, and Foerste. U. S. Geol. Surv., Mon., vol. xxxiii, pp. 348-364. 1899.  
Carboniferous. Rhode Island.
- Arago** beds, Diller. U. S. Geol. Surv., 17th Ann. Rept., pt. 1, pp. 458-462. 1896.  
Oregon. Included in Eocene.
- Arago beds, Dall. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 343. 1898.  
Oregon. Included in Eocene. Claibornian stage.
- Arago formation, Diller. U. S. Geol. Surv., 19th Ann. Rept., pt. iii, pp. 319-320. 1899.  
Oregon. Included in Eocene. Includes Coaledo and Pulaski formations.
- Arago formation, Smith. Jour. of Geol., vol. viii, pp. 459-460. 1900.  
Tertiary. Oregon. Included in Eocene. Includes Pulaski and Coaledo formations.
- Arapahoe** beds, Eldridge. Colo. Sci. Soc., Proc., vol. iii, p. 99. 1888.  
Tertiary. Colorado. Exact Syn. Willow Creek beds.
- Arapahoe, Eldridge. Colo. Sci. Soc., Proc., vol. iii, p. 97, footnote. 1888.  
Tertiary.
- Arapahoe, White. U. S. Geol. Surv., Bull., No. 82, p. 150. 1891.  
Cretaceous. Colorado.
- Arapahoe, Clark. U. S. Geol. Surv., Bull., No. 83, p. 135. 1891.  
Cretaceous. Colorado.
- Arapahoe formation, Cross. Am. Jour. Sci., 3d ser., vol. xlv, p. 20. 1892.  
Tertiary. Colorado.
- Arapahoe formation, Cannon. Colo. Sci. Soc., Proc., vol. iv, p. 253. 1893.  
Cretaceous. Colorado.
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- Barren series, Lower, White. 2d Pa. Geol. Surv., Rept. A<sup>2</sup>, pp. 23-26. 1877.  
Carboniferous. Pennsylvania.
- Barren series, Upper, Stevenson. 2d Pa. Geol. Surv., Rept. K<sup>2</sup>, pp. 25-29. 1877.  
Carboniferous. Pennsylvania.
- Barren series, Lower, Stevenson. 2d Pa. Geol. Surv., Rept. K<sup>2</sup>, pp. 64-72. 1877.  
Carboniferous. Pennsylvania. Includes Barton group.
- Barren Measures, Lower, Newberry. Ohio Geol. Surv., vol. iii, p. 723. 1878.  
Carboniferous. Ohio. Included in Coal Measures.
- Barren Measures, Platt. 2d Pa. Geol. Surv., Rept. H<sup>1</sup>, pp. 167-174. 1878.  
Carboniferous. Pennsylvania.
- Barren series, Lower, Stevenson. 2d Pa. Geol. Surv., Rept. K<sup>3</sup>, pp. 18-26. 1878.  
Carboniferous. Pennsylvania.
- Barren Group, Lower, Stevenson. Ohio Geol. Surv., vol. iii, pp. 203, 221. 1878.  
Carboniferous. Ohio. Included in Coal Measures.
- Barren series, Lower, White. 2d Pa. Geol. Surv., Rept. Q, pp. 23-38. 1878.  
Carboniferous. Pennsylvania. Includes Pittsburg limestone, Morgantown sandstone, Elk Lick limestone, Pine Creek limestone, Buffalo sandstone, Brush Creek limestone.
- Barren Measures, Chance. 2d Pa. Geol. Surv., Rept. V, pp. 13-15. 1879.  
Carboniferous. Pennsylvania.
- Barren Measures, Platt. 2d Pa. Geol. Surv., Rept. H<sup>2</sup>, p. 311. 1880.  
Carboniferous. Pennsylvania.
- Barren group, Upper, Stevenson. The Virginias, vol. ii, p. 70. 1881.  
Carboniferous. West Virginia. Included in Coal Measures.
- Barren group, Lower, Stevenson. The Virginias, vol. ii, pp. 98, 122. 1881.  
Carboniferous. West Virginia.
- Barren Measures, Lower, Platt. 2d Pa. Geol. Surv., Rept. H<sup>6</sup>, pp. xxviii-xxix. 1881.  
Carboniferous. Pennsylvania.
- Barren Coal Measures, White. 2d Pa. Geol. Surv., Rept. T<sup>3</sup>, pp. 48 et seq. 1885.  
Carboniferous. Pennsylvania.
- Barren Measures, D'Invilliers. 2d Pa. Geol. Surv., Ann. Rept. 1885, pp. 177-181. 1886.  
Carboniferous. Pennsylvania. Includes Connellsville and Morgantown sandstones. Crinoidal limestone No. 19.
- Barren Measures, D'Invilliers. 2d Pa. Geol. Surv., Ann. Rept. 1886, pp. 74-79, 208, 265, 295-296. 1887.  
Carboniferous. Pennsylvania. Exact Syn. Pittsburg series.
- Barren Measures, Upper, D'Invilliers. 2d Pa. Geol. Surv., Ann. Rept. 1886, pp. 58-63, 202-206, 262-263, 234-336. 1887.  
Carboniferous. Pennsylvania. Includes Green County group and Washington County group.

- Barren Measures, Upper, Carll. 2d Pa. Geol. Surv., Rept. I<sup>5</sup>, p. 122. 1890.  
Carboniferous. Pennsylvania. Exact Syn. Washington County group.
- Barren Measures, Lower, Carll. 2d Pa. Geol. Surv., Rept. I<sup>5</sup>, pp. 123-125. 1890.  
Includes Crinoidal limestone = Ames limestone of Ohio and West Virginia. Exact Syn. Pittsburg series.
- Barren Measures, White. U. S. Geol. Surv., Bull., No. 65, p. 70. 1891.  
Carboniferous. Ohio, Pennsylvania, West Virginia. Exact Syn. Elk River series.
- Barren Measures, D'Invilliers. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. ii, pp. 2406-2447. 1895.  
Carboniferous. Pennsylvania. Exact Syn. No. xiv, Pittsburg series, Elk River series of West Virginia.
- Barren Measures, Upper, D'Invilliers. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. ii, pp. 2565-2588. 1895.  
Carboniferous. Pennsylvania. Includes Green County group, Washington County group.  
Exact Syn. No. xvi, Permo-Carboniferous or Dunkard Creek series.
- Barrett** shales, Jenney. U. S. Geol. Surv., 19th Ann. Rept., pt. ii, pp. 568-587, 593. 1899.  
Cretaceous. South Dakota. Included in Dakota group.
- Barrett shales, Ward. U. S. Geol. Surv., 19th Ann. Rept., pt. ii, p. 593. 1899.  
Cretaceous. South Dakota.
- Barrington** clays, Woodworth. U. S. Geol. Surv., 17th Ann. Rept. pt. i, p. 987. 1896.  
Pleistocene. Rhode Island.
- Bartlett's Island** series, Shaler. U. S. Geol. Surv., 8th Ann. Rept., pt. ii, p. 1038. 1889.  
Maine.
- Barton** group, Stevenson. 2d Pa. Geol. Surv., Rept. K<sup>2</sup>, pp. 67-68. 1877.  
Carboniferous. Pennsylvania. Included in Lower Barren series.
- Basal** clays, Dumble. Texas Geol. Surv., 1st Ann. Rept., pl. iii, pp. xli-xliv. 1890.  
Tertiary. Texas. Included in Eocene.
- Bashi** deposit, Heilprin. Phil. Acad. Nat. Sci., Jour., vol. ix, pp. 140, 144. 1884.  
Tertiary. Alabama. Included in Eocene. Exact Syn. Eolignitic.
- Bashi series, Smith and Johnson. U. S. Geol. Surv., Bull. No. 43, p. 43. 1887.  
Tertiary. Alabama. Included in Lignitic or Lower Eocene. Exact syn. Woods Bluff series.
- Bashi, Langdon. Geol. Soc. Am., Bull., vol. ii, pp. 588, 596. 1891.  
Tertiary. Alabama. Included in Lower Eocene.
- Bashi series, Langdon. Ga. Geol. Surv., 1st Rept. of Prog., p. 96. 1891.  
Tertiary. Georgia. Exact syn. Woods Bluff series.
- Bashi division, Spencer. Geol. Surv. Ga., 1st Rept. of Prog., 1890-91. 1891.  
Tertiary. Georgia. Included in Lignitic.
- Bashi series, Dall. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 345. 1898.  
Tertiary. Alabama. Included in Eocene. Exact Syn. Woods Bluff series.
- Bastard** limestone, White. 2d Pa. Geol. Surv., Rept. G<sup>7</sup>, pp. 97-98. 1883.  
Silurian. Pennsylvania. Included in Lower Helderberg, or No. VI.
- Bastard limestone, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, p. 948. 1892.  
Silurian. Pennsylvania. Included in No. VI. Stormville series.
- Bates Hole** formation, Smith. Jour. of Geol., vol. viii, p. 456. 1900.  
Tertiary. Wyoming. Included in Eocene.
- Batesville** sandstone, Simonds. Ark. Geol. Surv., 1888, vol. iv, pp. 49-53, 149. 1888.  
Carboniferous. Arkansas. Included in Lower Carboniferous.
- Batesville sandstone, Penrose. Ark. Geol. Surv., 1890, vol. i, pp. 139, 140. 1890.  
Carboniferous. Arkansas. Included in Mississippian series. Osage group.

- Batesville ash-bed, Williams. Ark. Geol. Surv., 1890, vol. ii, pp. 373-375. 1890.  
Arkansas.
- Batesville sandstone, Simonds and Hopkins. Ark. Geol. Surv., 1891, vol. ii, pp. 51-55. 1891.  
Carboniferous. Arkansas. Included in Lower Carboniferous.
- Batesville sandstone, Williams. Ark. Geol. Surv., Ann. Rept. for 1892, pp. 355-358. 1900.  
Carboniferous. Arkansas.
- Baucari** division, Dumble. Am. Inst. Mg. Engrs., Trans., vol. xxix, p. 126. 1900.  
Tertiary. Mexico.
- Bay** shot sand, Eaton. Am. Jour. Sci., 1st ser., vol. xii, p. 18. 1826.
- Bayard**, Darton and Taff. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 28. 1896.  
Carboniferous. West Virginia, Maryland.
- Bayard, Clark. Md. Geol. Surv., vol. i, p. 156. 1897.  
Carboniferous. Maryland. Included in Coal Measures.
- Bayard formation, Clark. Md. Geol. Surv., vol. i, p. 186. 1897.  
Carboniferous. Maryland.
- Bayard, Clark. Md. Geol. Surv., vol. ii, p. 170. 1898.  
Carboniferous. Maryland.
- Bayou Chicot** limestone, Harris and Veatch. La. State Exp. Station, pt. v, p. 61. 1899.  
Cretaceous. Louisiana. Included in Ripley stage.
- Bays** sandstone, Campbell. Geol. Soc. Am., Bull., vol. v, pp. 171, 176. 1894.  
Silurian. Virginia. Included in Medina.
- Bays sandstone, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 12, 26. 1894, 1896.  
Silurian. Kentucky, Virginia, Tennessee.
- Bays sandstone, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 16, 25, 27. 1895, 1896.  
Silurian. Tennessee, North Carolina.
- Bays limestone, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 33. 1896.  
Silurian. Tennessee. Exact Syn. Bays sandstone of Loudon folio. Part. Syns. Chickamauga limestone of Kingston folio; Trenton and Nashville group of Safford.
- Bays sandstone, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 44. 1897.  
Silurian. Virginia, West Virginia.
- Bayssandstone, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 59. 1899.  
Silurian. Virginia, Tennessee.
- Beacon Hill**, Salisbury. N. J. Geol. Surv., Rept. 1893, pp. 47-57, 67-72. 1894.  
Pleistocene. New Jersey. Included in Yellow gravel.
- Beacon Hill formation, Salisbury. N. J. State Geol., Ann. Rept. 1894, pp. 99-104. 1895.  
Tertiary. New Jersey. Included in Miocene.
- Beacon Hill formation, Salisbury. Geol. Soc. Am., Bull., vol. vi, p. 483. 1895.  
Tertiary. New Jersey. Included in Yellow gravel; Miocene?
- Beacon Hill formation, Salisbury. N. J. Geol. Surv., Rept. 1895, pp. 3-7. 1896.  
Tertiary. New Jersey. Included in Miocene.
- Beacon Hill formation, Salisbury. N. J. Geol. Surv., Rept. 1896, pp. 13-15. 1897.  
New Jersey.
- Beacon Hill formation, Salisbury. N. J. Geol. Surv., Rept. 1897, pp. 11-13. 1898.  
New Jersey.
- Beade Mountain** bed, Drake. Texas Geol. Surv., 4th Ann. Rept., p. 426. 1893.  
Carboniferous. Texas. Included in Albany division.

- Bear River**, Cope. U. S. Geol. and Geog. Surv. of Terr., 1873, p. 439. 1874.  
Cretaceous or Tertiary. Utah. Exact Syn. **Green River**.
- Bear River group**, Cope. U. S. Geol. and Geog. Surv. of Terr., Bull., No. 2, p. 13. 1874.  
Cretaceous. Wyoming.
- Bear River group**, Cope. U. S. Geol. and Geog. Surv. of Terr., Mon., vol. ii, pp. 36-40. 1875.  
Cretaceous. Wyoming.
- Bear River group**, Peale. U. S. Geol. and Geog. Surv. of Terr., 8th Ann. Rept., p. 144. 1876.  
Tertiary. Colorado.
- Bear River beds**, Bowman. Can. Geol. Surv., new ser., vol. iii, pt. i, pp. 20C-22C. 1889.  
British Columbia. Included in Upper Paleozoic. Includes Bear River limestone and Cherty series.
- Bear River formation**, Stanton. Am. Jour. Sci., 3d ser., vol. xliii, pp. 98-115. 1892.  
Cretaceous. Utah, Wyoming.
- Bear River formation**, White. Am. Jour. Sci., 3d ser., vol. xliii, pp. 91-97. 1892.  
Cretaceous. Utah, Wyoming. Exact Syn. **Bear River Laramie**.
- Bear River**, White. U. S. Geol. Surv., Bull., No. 128. 1895.  
Cretaceous. Utah, Idaho, Wyoming.
- Bearwallow conglomerate**, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 44. 1897.  
Carboniferous. Virginia, West Virginia. Part. Syn. No. xii, Great conglomerate of Rogers.
- Beauharnois formation**, Chapman. Can. Inst., new ser., vol. viii, pp. 186-190. 1863.  
Cambrian. Canada. Included in Potsdam group. "Lower Silurian."
- Beaver division**, Comstock. Texas Geol. Surv., 1st Ann. Rept., p. 295. 1890.  
Silurian. Texas. Included in Leon series.
- Beaver limestone**, Hayes. Geol. Soc. Am., Bull., vol. v, p. 467. 1894.  
Cambrian. Tennessee and Georgia. Included in Lower Cambrian.
- Beaver limestone**, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 16. 1895.  
Cambrian. Tennessee, North Carolina.
- Beaver River group**, White. 2d Pa. Geol. Surv., Rept. Q, pp. 65-71. 1878.  
Carboniferous. Pennsylvania. Includes Homewood sandstone, Mercer limestone, Connoquenessing sandstone, and Sharon shales.
- Beaver River series**, Chance. 2d Pa. Geol. Surv., Rept. V, p. 221 et seq. 1879.  
Carboniferous. Pennsylvania.
- Beaver River group**, D'Inwilliers. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. i, p. 1912. 1895.  
Carboniferous. Pennsylvania. Included in No. xii, Pottsville conglomerate.
- Beavertown marl**, Foerste. Denison Univ. Sci. Lab., Bull., vol. i, p. 65. 1885.  
Ohio.
- Beavertown marl**, Foerste. Denison Univ. Sci. Lab., Bull., vol. iii, p. 4. 1888.  
Ohio.
- Beavertown marl**, Orton. Ohio Geol. Surv., vol. vii, p. 56. 1893.  
Silurian. Ohio.
- Becket gneiss**, Emerson. U. S. Geol. Surv., Geol. Atlas of U. S., Hawley sheet. 1892.  
Cambrian. Massachusetts. Part Syn. Stockbridge limestone.
- Beckett conglomerate**, Emerson. Geol. Soc. Am., Bull., vol. vii, p. 5. 1895.  
Cambrian. Massachusetts.

- Becket gneiss, Emerson. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 50. 1898.  
Cambrian. Massachusetts.
- Becket conglomerate gneiss, Emerson. U. S. Geol. Surv., Mon., vol. xxix, pp. 31-37. 1898.
- Cambrian. Massachusetts. Included in Lower Cambrian.
- Becraft** limestone, Darton. N. Y. State Geol., 13th Ann. Rept., pp. 245-246, 304. 1894.
- Silurian. New York. Included in Lower Helderberg.
- Becraft limestone, Clarke and Schuchert. Science, new ser., vol. x, pp. 876-877. 1899.
- Devonian. New York. Included in Helderbergian.
- Becraft limestone, Weller. N. J. Geol. Surv., Rept. 1899, p. 39. 1900.
- Devonian. New Jersey.
- Bedford** rock, Owen. Geol. Reconm. Indiana, Rept. 1859-60, p. 137. 1862.
- Carboniferous. Indiana.
- Bedford shale, Newberry. Ohio Geol. Surv., Rept. 1869, p. 22. 1871.
- Carboniferous. Ohio. Included in Waverly group.
- Bedford shales, Reid. Ohio Geol. Surv., Rept. Prog. 1870, p. 469. 1871.
- Ohio.
- Bedford shale, Read. Ohio Geol. Surv., vol. i, pt. i, pp. 485, 508, 514, 525. 1873.
- Carboniferous. Ohio.
- Bedford stone, Collett. Indiana Geol. Surv., 5th Ann. Rept. for 1873, pp. 276, 280, 283. 1874.
- Indiana.
- Bedford shale, Newberry. Ohio Geol. Surv., vol. ii, pp. 90-92, 188, 212. 1874.
- Carboniferous. Ohio. Included in Waverly. Lower Carboniferous.
- Bedford shale, Winchell. Ohio Geol. Surv., vol. ii, pp. 241, 263. 1874.
- Carboniferous. Ohio.
- Bedford shale, Lesley. 2d Pa. Geol. Surv., Rept. I, pp. 73-74. 1875.
- Carboniferous. Pennsylvania and Ohio. Exact Syn. No. ix?
- Bedford shale, Orton. Rev. of Strat. Geol. of East. Ohio, p. 4. 1880.
- Carboniferous. Ohio.
- Bedford shale, Orton. Ohio Geol. Surv., Prelim. Rept. Petroleum and Inflammable Gas, p. 25. 1886.
- Ohio. Included in Waverly series.
- Bedford shale, Orton. Ohio Geol. Surv., vol. vi, pp. 3, 33. 1888.
- Carboniferous. Ohio. Included in Waverly group.
- Bedford shale, Herrick. Denison Univ. Sci., Lab. Bull., vol. iv, pp. 101, 106. 1888.
- Ohio.
- Bedford shale, Cooper. Denison Univ. Sci. Lab., Bull., vol. v, p. 25. 1890.
- Ohio. Included in Waverly group.
- Bedford shale, Orton. Ohio Geol. Surv., 3d Organization, 1st Ann. Rept., pp. 34-35. 1890.
- Carboniferous. Ohio. Included in Waverly group.
- Bedford shale, Orton. Ohio Geol. Surv., vol. vii, pp. 4, 27. 1893.
- Carboniferous. Ohio. Included in Waverly group.
- Bedford oolitic limestone, Hopkins and Siebenthal. Indiana Dept. Geol. and Nat. Res., 21st Ann. Rpt. (1896), p. 291. 1897.
- Carboniferous. Indiana. Exact Syns. Indiana oolitic limestone, Spergen Hill limestone, White River stone.
- Bedford oolitic stone, Blatchley. Indiana Dept. Geol. and Nat. Res., 21st Ann. Rept. (1896), p. 14. 1897.



- Bedford oolitic limestone, Blatchley. Indiana Dept. Geol. and Nat. Res., 22d Ann. Rept. (1897), pp. 14, 20. 1898.  
Carboniferous. Indiana.
- Bedford oolitic limestone, Ashley. Indiana Dept. Geol. and Nat. Res., 23d Ann. Rept. (1898), p. 79. 1899.  
Carboniferous. Indiana.
- Bed Rock** series, Lindgren. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 31. 1896.  
Carboniferous. California. Includes Calaveras formation.
- Bed Rock series, Turner and Ransome. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 41. 1897.  
Carboniferous. California. Includes Calaveras and Mariposa formations.
- Bed Rock series, Turner. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 37. 1897.  
Carboniferous and older. California. Includes Calaveras and Robinson formations.
- Bed Rock series, Lindgren. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 39. 1897.  
Carboniferous and Juratrias. California. Includes Calaveras and Sailor Canyon formations.
- Bed Rock series, Turner. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 43. 1898.  
Juratrias and older. California. Includes Calaveras and Cedar formations.
- Bed Rock series, Turner and Ransome. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 51. 1898.  
Carboniferous. California. Includes Calaveras.
- Bed Rock series, Lindgren. U. S. Geol. Surv., Geol. Atlas of U. S., Folio 66. 1900.  
California. Includes Mariposa, Sailor Canyon, and Calaveras formations.
- Beekmantown** limestone, Clarke and Schuchert. Science, new ser., vol. x, pp. 876-877. 1899.  
Silurian. New York. Included in Canadian.
- Bee Spring** sandstone, Moore. Ky. Geol. Surv., new ser., vol. ii, pp. 105-106. 1877.  
Carboniferous. Kentucky. Included in Coal Measures.
- Belfast** bed, Foerste. Cin. Soc. Nat. Hist., Jour., vol. xviii, nos. 3 and 4, pp. 161, 190. 1896.  
Silurian. Ohio. Included in Lower Silurian.
- Belfast bed, Foerste. Ind. Dept. Geol. and Nat. Hist., 24th Ann. Rept., pp. 67-68. 1900.  
Silurian. Ohio. Included in Middle Silurian.
- Belle Isle** shale, Jukes. Gen. Rept. on Geol. of Newfoundland, pp. 51 et seq. 1843.  
Cambrian? Newfoundland.
- Bellowspipe** quartzite, Dale. U. S. Geol. Surv., 14th Ann. Rept., pt. ii, pl. lxxi. 1894.  
Silurian. Massachusetts.
- Bellowspipe limestone, Pumpelly, Wolff, and Dale. U. S. Geol. Surv., Mon., vol. xxiii, pp. 20, 180, 184-186. 1894.  
Silurian. Massachusetts.
- Bell's Landing** group, Aldrich. Ala. Geol. Surv., Bull., No. 1, p. 54. 1886.  
Tertiary. Alabama.
- Bell's Landing series, Smith and Johnson. U. S. Geol. Surv., Bull., No. 43, p. 46. 1887.  
Tertiary. Alabama. Included in Lignitic; Lower Eocene.
- Bell's Landing, Langdon. Geol. Soc. Am., Bull., vol. ii, p. 588. 1891.  
Tertiary. Alabama. Included in Lower Eocene.

- Bell's Landing, Clark. U. S. Geol. Surv., Bull., No. 141, p. 57. 1896.  
Tertiary. Alabama. Included in Eocene.
- Bellton** coal group, White. U. S. Geol. Surv., Bull., No. 65, p. 32. 1891.  
Carboniferous. West Virginia, Pennsylvania. Included in Permo-Carboniferous;  
Dunkard Creek series. Includes Nineveh, Dunkard, and Jollytown coals.
- Bellvale Flags**, Darton. Geol. Soc. Am., Bull., vol. v, pp. 367, 373. 1894.  
Devonian. New Jersey.
- Bellvale flags, Ries. N. Y. State Geol., 15th Ann. Rept., vol. i, p. 404. 1897.  
Devonian. New York.
- Belly River** series, Dawson. Can. Geol. Surv., Rept. 1882-83-84, pp. 37C-126C. 1885.  
Cretaceous. Canada.
- Belly River series, McConnell. Can. Geol. Surv., new ser., vol. i, pp. 63C-65C. 1886.  
Cretaceous. Canada.
- Belly River series, Tyrrell. Can. Geol. Surv., new ser., vol. ii, 90E-129E. 1887.  
Cretaceous. Canada.
- Belly River formation, White. U. S. Geol. Surv., Bull., No. 82, p. 173. 1891.  
Cretaceous. Rocky Mountains.
- Beloit** formation, Sardeson. Am. Geol., vol. xix, pp. 24, 26-29. 1897.  
Silurian. Mississippi Valley. Included in Lower Silurian. Includes Fucoid,  
Stictopora, Stictoporella, Bellerophon, and Buff limestone beds.
- Belt**, Peale. U. S. Geol. Surv., Bull., No. 110, p. 16. 1893.  
Algonkian. Montana.
- Belt beds, Iddings and Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 1. 1894.  
Algonkian. Montana.
- Belt, Peale. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 24. 1896.  
Algonkian. Montana.
- Belt beds, Weed and Pirsson. U. S. Geol. Surv., Bull., No. 139, p. 32. 1896.  
Algonkian. Montana.
- Belt formation, Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 56. 1899.  
Algonkian. Montana.
- Belt terrane, Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 56. 1899.  
Algonkian. Montana. Includes Neihart quartzite and Belt formation.
- Belt terrane, Walcott. Geol. Soc. Am., Bull., vol. x, pp. 199, 201. 1899.  
Algonkian? Pre-Cambrian. Montana.
- Belt terrane, Weed. U. S. Geol. Surv., 20th Ann. Rept., pt. iii, pp. 279-283. 1900.  
Algonkian. Montana. Includes Neihart quartzite, Chamberlain shale, Newland  
limestone, Greyson shale, and Spokane shale.
- Belva** shale, Stevenson. N. Y. Acad. Sci., Trans., vol. xv., p. 51. 1896.  
Carboniferous. Arkansas. Included in Sebastian stage.
- Belvidere** shales, Hill. Am. Jour. Sci., 3d ser., vol. l, pp. 208-234. 1895.  
Cretaceous. Kansas, Oklahoma, New Mexico. Included in Comanche series.
- Belvidere** beds, Cragin. Am. Geol., vol. xvi, p. 357. 1895.  
Cretaceous. Kansas. Includes Kiowa shales, Champion shell bed, Cheyenne  
sandstone.
- Bend**, Dumble. Texas Geol. Surv., 1st Ann. Rept., pl. iii, pp. lxiii-lxv. 1890.  
Carboniferous. Texas. Included in Lower Carboniferous.
- Bend formation, Cummins. Texas Geol. Surv., 2d Ann. Rept., pp. 360-367, 372. 1891.  
Carboniferous. Texas. Included in Coal Measures.
- Bend formation, Smith. Jour. of Geol., vol. ii, pp. 611-612. 1894.  
Juratrias. California.



- Bend, Diller. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 15. 1895.  
Juratrias. California.
- Benezette** limestone, Ashburner. 2d Pa. Geol. Surv., Rept. R<sup>2</sup>, p. 105. 1885.  
Carboniferous. Pennsylvania. Included in Pocono.
- Benton** shale, Eldridge. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 9. 1894.  
Cretaceous. Colorado.
- Benton, Bain. Iowa Geol. Surv., vol. iii, pp. 101-114. 1895.  
Cretaceous. Iowa.
- Benton, Emmons, Cross, and Eldridge. U. S. Geol. Surv., Mon., vol. xxvii, p. 65. 1896.  
Cretaceous. Colorado. Included in Colorado group.
- Benton group, Gilbert. U. S. Geol. Surv., 17th Ann. Rept., pt. ii, p. 564. 1896.  
Cretaceous. Colorado. Includes Carlile shale, Greenhorn limestone, and Graneros shale.
- Benton formation, Gilbert. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 36. 1897.  
Cretaceous. Colorado. Includes Graneros shale, Greenhorn limestone, and Carlile shale.
- Benton, Logan. Kan. Univ. Geol. Surv., vol. ii, pp. 215-219. 1897.  
Cretaceous. Kansas. Included in Upper Cretaceous.
- Benton, Adams. Kan. Univ. Geol. Surv., vol. iv, p. 27. 1898.  
Cretaceous. Kansas. Included in Upper Cretaceous. Includes Upper and Lower groups.
- Benton formation, Weed. U. S. Geol. Surv., 18th Ann. Rept., pt. iii, pp. 482-484. 1898.  
Cretaceous. Montana. Included in Upper Cretaceous.
- Benton shale, Wilder. Iowa Geol. Surv., vol. x, p. 111. 1900.  
Cretaceous. Iowa.
- Berea grit**, Newberry. Ohio Geol. Surv., Rept. Prog. 1869, pp. 21, 22, 29. 1870.  
Carboniferous. Ohio. Included in Waverly group.
- Berea grit, Newberry. Ohio Geol. Surv. (for 1869), p. 22. 1871.  
Carboniferous. Ohio. Included in Waverly group.
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Ohio.
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- Black limestone, Douglass. Mich. Legislature, Doc., vol. i, no. xi (4th Ann. Rept. State Geologist, for 1840), pp. 547, 551. 1841.
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- Black River** limestone group, Hall. Geol. of New York, pt. iv, 4th Geol. Dist., pp. 18, 28. 1843.
- Paleozoic. New York. Included in New York system. Includes Birdseye and Chazy.
- Black River** limestone, Mather. Geol. of New York, pt. i, pp. 402-409. 1843. Paleozoic. New York. Included in Champlain division. Includes Mohawk limestone, Birdseye limestone, Bald Mountain limestone, Blue limestone, Chazy limestone, Neeleytown limestone, Metalliferous, Transition and Sparry lime rocks, and No. II, Pennsylvania survey.
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- Black River** limestone, Hall. Am. Jour. Sci., 2d ser., vol. xvii, pp. 181-193. 1854. Silurian. Michigan.
- Black River**, Shumard. Mo. Geol. Surv., 1st and 2d Ann. Repts., pt. ii, p. 159. 1855. Silurian. Missouri. Included in Lower Silurian.
- Black River** limestone, Hitchcock. Geol. of Vt., vol. i, pp. 280-281. 1861. Paleozoic. Vermont. Included in Trenton period. Exact Syn. Isle La Motte marble.
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- Black River**, Broadhead. Mo. Geol. Surv., Rept. 1855-1873, p. 50. 1873. Silurian. Missouri. Included in Lower Silurian.
- Black River** and Birdseye, Shumard. Mo. Geol. Surv., Rept. 1855-1871, pp. 267, 283-307. 1873.
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- Black River** group, Miller. Cin. Soc. Nat. Hist., Jour., vol. iv, no. iv, pp. 270, 281. 1881.
- Includes Birdseye and Black River limestones.
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- Black River limestone, Cumings. N. Y. State Mus., Bull., vol. vii, p. 423. 1900.  
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- alciferous beds, Prime. Am. Jour. Sci., 3d ser., vol. ix, pp. 435, 437, 438, 439. 1875.
- Silurian. Pennsylvania.
- alciferous mica-schist, Hitchcock. Geol. of New Hampshire, pt. ii, pp. 398-402. 1877.
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- alciferous, Endlich. U. S. Geol. and Geog. Surv. of Terr., 11th Ann. Rept., pp. 71, 102, 119. 1879.
- Calciferous. Wyoming.
- alciferous, Platt. 2d Pa. Geol. Surv., Rept. T, pp. 55-59. 1881.
- Silurian. Pennsylvania.
- alciferous group, Miller. Cin. Soc. Nat. Hist., Jour., vol. iv, no. iv, pp. 269, 276. 1881.
- Ordovician.
- alciferous, Stevenson. 2d Pa. Geol. Surv., Rept. T<sup>2</sup>, pp. 93-94. 1882.
- Silurian. Pennsylvania.
- alciferous formation, Freeman. Economical Geol. of Ill., vol. ii, p. 229. 1882.
- Illinois.
- alciferous group, Miller. North American Geol. and Pal., p. 31. 1889.
- alciferous, Brainerd and Seeley. Am. Mus. Nat. Hist., Bull., vol. iii, p. 1. 1890.
- Silurian. New York, Vermont.
- alciferous, Hopkins. Ark. Geol. Surv., 1890, vol. iv, p. 50. 1890.
- Silurian, Arkansas.
- alciferous formation, Penrose. Ark. Geol. Surv., 1890, vol. i, pp. 116-121. 1890.
- Silurian. Arkansas.
- alciferous formation, Brainerd and Seeley. Am. Mus. Nat. Hist., Bull., vol. iii, 1890-91, pp. 1-23. 1890.
- Champlain Valley.
- alciferous limestone, Hopkins. Ark. Geol. Surv., 1890, vol. iv, p. 115. 1890.
- Silurian. Arkansas. Includes Magnesian limestones of northwestern Arkansas.
- alciferous, Prosser. Geol. Soc. Am., Bull., vol. iv, pp. 108, 116. 1893.
- Ordovician. New York.
- alciferous sand rock, Darton. N. Y. State Geol., 13th Ann. Rept., pp. 417-421. 1894.
- Silurian. New York.
- alciferous, Cushing. N. Y. State Geol., 13th Ann. Rept., pp. 479-481. 1894.
- Silurian. New York.
- alciferous, Cushing. Geol. Soc. Am., Bull., vol. vi, p. 287. 1895.
- Cambrian. New York.
- alciferous, Marcou. Am. Geol., vol. xix, pp. 46-49. 1897.
- Silurian. New York.
- alciferous sand rock, Prosser and Cumings. N. Y. State Geol., 15th Ann. Rept., vol. i, pp. 619-659. 1897.
- Silurian. New York.
- alciferous sand rock, Cumings. N. Y. State Mus., Bull., vol. vii, p. 419. 1900.
- Silurian. New York. Included in Ordovician.
- Calderwood Neck** schists, Smith. Geol. of the Fox Islands, pp. 28-29. 1896.
- Maine. Included in Pre-Silurian.
- Calhoun** shales, Haworth. Kan. Univ. Geol. Surv., vol. iii, p. 94. 1898.
- Carboniferous. Kansas. Included in Shawnee formation.
- Calhoun sandstone and shale, Beede. Kans. Acad. Sci., Trans., vol. xv, p. 29. 1898.
- Carboniferous. Kansas.
- Calhoun limestone, Beede. Kans. Acad. Sci., Trans., vol. xv, pp. 28-29. 1898.
- Carboniferous. Kansas.

**Callaway** limestone, Keyes. Mo. Geol. Surv., vol. iv, pp. 30-43. 1894.

Devonian. Missouri. Included in Hamilton stage.

**Callaway** beds, Keyes. Mo. Geol. Surv., vol. viii, p. 340. 1895.

Devonian. Missouri.

**Callaway** limestone, Wheeler. Mo. Geol. Surv., vol. xi, p. 42. 1896.

Devonian. Missouri. Includes Hamilton group.

**Caloosahatchie** beds, Dall. Wagner Free Inst. Sci., Trans., vol. iii, pt. ii, p. 209. 1892.

Pliocene. Florida. Included in Pliocene (Floridian epoch), Floridian group.

Part. Syn. Floridian group.

**Caloosahatchie** beds, Dall and Harris. U. S. Geol. Surv., Bull. No. 84, p. 142. 1892.

Tertiary. Florida. Included in Pliocene. Exact Syn. Floridian.

**Caloosahatchie** beds, Dall. Proc. U. S. Nat. Mus., vol. xviii, p. 27. 1895.

Tertiary. Florida. Included in Pliocene.

**Caloosahatchie** beds, Dall. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 337. 1898.

Tertiary. Florida. Included in Pliocene.

**Calumet Beach**, Blatchley. Indiana Dept. Geol. and Nat. Res., 22d Ann. Rept. for 1897, pp. 34, 35. 1898.

Glacial. Indiana.

**Cambridge** limestone, Andrews. Ohio Geol. Surv., vol. i, pt. i, p. 262. 1873.

Carboniferous. Ohio. Included in Coal Measures.

**Cambridge** limestone, Orton. Ohio Geol. Surv., vol. iii, p. 895. 1878.

Carboniferous. Ohio.

**Cambridge** limestone, Lovejoy. Ohio Geol. Surv., vol. vi, pp. 631, 633. 1888.

Carboniferous. Ohio.

**Cambridge** limestone, White. U. S. Geol. Surv., Bull. No. 65, p. 93. 1891.

Carboniferous. Ohio, Pennsylvania, West Virginia. Included in Barren Measures, Elk River series. Includes Upper and Lower Cambridge. Part. Syn.

Pine Creek limestone. Coleman limestone, Black fossiliferous limestone, Brush Creek limestone.

**Cambridge** slates, Woodworth. Boston Soc. Nat. Hist., Proc., vol. xxvi, 1892-1893. p. 125. 1893.

Massachusetts.

**Cambridge** formation, Hill. Harvard Coll. Mus. Comp. Zool., Bull., vol. xxxiv, pp. 57-65. 1899.

Tertiary. Jamaica. Included in Eocene. Includes Catadupa and Chapelton beds.

**Camden** series, Hill. Ark. Geol. Surv., 1888, vol. ii, pp. 48, 177. 1888.

Tertiary. Arkansas. Includes Arkadelphia shales, Bingen sands, and Cleveland County Red sands.

**Camden** chert, Safford and Schuchert. Am. Jour. Sci., 4th ser., vol. vii, pp. 429-430. 1899.

Devonian. Tennessee. Included in (Lower Oriskany).

**Camden** chert, Schuchert. Geol. Soc. Am., Bull., vol. xi, pp. 320-322. 1900.

Devonian. Tennessee. Included in Oriskany.

**Camp Colorado** bed, Drake. Texas Geol. Surv., 4th Ann. Rept., p. 418. 1893.

Carboniferous. Texas. Included in Cisco division.

**Camp Creek** bed, Drake. Texas Geol. Surv., 4th Ann. Rept., pp. 416-417. 1893.

Carboniferous. Texas. Included in Cisco division.

**Campbell Creek** beds, Dawson. Can. Geol. Surv., new ser., vol. vii, pp. 44B-45F. 129B. 1896.

Carboniferous. British Columbia. Included in Cache Creek group.

**Campophyllum** bed, Drake. Texas Geol. Surv., 4th Ann. Rept., p. 401. 1893.

Carboniferous. Texas. Included in Canyon division.

**Canaan** dolomite, Hobbs. Jour. of Geol., vol. i, p. 726. 1893.

Silurian. Massachusetts. Included in Mount Washington series. Ordovician.



- Janaan**, Darton. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 32. 1896.  
Carboniferous. Virginia, West Virginia. Exact Syn. Mauch Chunk shales. Part. Syns. Rogers, No. 11, and Umbral.
- Janaan**, Darton and Taff. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 28. 1896.  
Carboniferous. West Virginia, Maryland.
- Janaan**, Taff and Brooks. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 34, 1896.  
Carboniferous. West Virginia.
- Janaan formation**, Darton. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 61, 1899.  
Carboniferous. Virginia, West Virginia.
- Canadian**, Clarke and Schuchert. Science, new ser., vol. x, p. 877.  
Silurian. New York. Includes Beekmantown limestone, Chazy limestone.
- Canal limestone**, Ashburner. 2d Pa. Geol. Surv., Ann. Rept. 1885, p. 445 et seq. 1886.  
Carboniferous. Pennsylvania. Included in Coal Measures.
- Cannelton coal**, White. U. S. Geol. Surv., Bull. No. 65, p. 97. 1891.  
Carboniferous. West Virginia. Included in Barren Measures, Elk River series. Includes Upper and Middle Cannelton.
- Cannelton sandstone**, Hopkins. Indiana Dept. Geol. and Nat. Res., 20th Ann. Rept. (1895), p. 314. 1896.  
Indiana.
- Canon City group**, Hayden. U. S. Geol. and Geog. Surv. of Terr., Bull., vol. i, no. v, 2d ser., p. 401. 1876.  
Cretaceous or Tertiary. Colorado.
- Cantera**, Kimball. Am. Jour. Sci., 2d ser., vol. xlviii, p. 379 et seq. 1869.  
Cretaceous. Mexico.
- Cantwell conglomerate**, Eldridge. U. S. Geol. Surv., 20th Ann. Rept., pt. vii, p. 16, 1900.  
Alaska.
- Canyon division**, Cummins. Texas Geol. Surv., 2d Ann. Rept., p. 374. 1891.  
Carboniferous. Texas. Included in Coal Measures.
- Canyon division**, Drake. Texas Geol. Surv., 4th Ann. Rept., pp. 387-402. 1893.  
Carboniferous. Texas. Includes Campophyllum bed, Bluff Creek, Home Creek, Hog Creek, Chert, No. 7, Clear Creek, Cedarton, Adams Branch limestone, Brownwood, Rochelle conglomerate, and Coral limestone beds.
- Canyon conglomerate**, Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 30, 1896.  
Tertiary. Wyoming. Included in Neocene.
- Cap-au-Grise sandstone**, Keyes. Iowa Acad. Sci., Proc., vol. v, p. 60. 1898.  
Ordovician. Iowa.
- Cape Beaufort** Coal Measures, Dall and Harris. U. S. Geol. Surv., Bull. No. 84, p. 249. 1892.  
Carboniferous. Alaska.
- Cape Cod series**, Shaler. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 535. 1898.  
Tertiary and later. Massachusetts. Includes Nashaquitsa and Barnstable series and other unnamed later deposits.
- Cape Girardeau limestone**, Swallow. Mo. Geol. Surv., 1st and 2d Ann. Rept., p. 109. 1855.  
Silurian. Missouri. Included in Upper Silurian.
- Cape Girardeau**, Shumard. St. Louis Acad. Sci., Trans., vol. ii, p. 156. 1868.  
Silurian. Missouri.
- Cape Girardeau limestone**, Shumard. Mo. Geol. Surv., Rept. 1855-1871, pp. 263, 264. 1873.  
Silurian. Missouri. Included in Upper Silurian.
- Cape Girardeau limestone**, Hopkins. Ark. Geol. Surv., 1890, vol. iv, p. 51. 1890.  
Silurian. Arkansas.

Cape Girardeau sandstone, Keyes. Mo. Geol. Surv., vol. iv, p. 39. 1894.

Silurian. Missouri. Included in Hudson shales.

**Cape Horn** formation, Lindgren. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 66. 1900.

Carboniferous. California. Included in Calaveras formation.

**Cape John** sandstones, Ami. Brit. Assoc. Adv. Sci., Rept. 1899, p. 756. 1899.

Carboniferous. Nova Scotia.

Cape John formation, Ami. Can. Rec. Sci., vol. viii, pp. 162-163. 1900.

Carboniferous. Canada. Included in Neo-Carboniferous.

**Cape May** formation, Salisbury. N. J. Geol. Surv., Rept. 1897, pp. 19-20. 1898.

Pleistocene. New Jersey.

**Capitol** limestone, Safford. Geol. of Tennessee, pp. 277-278. 1869.

Silurian. Tennessee. Included in Nashville formation.

**Caprina** limestone, Shumard. St. Louis Acad. Sci., Trans., vol. i, pp. 583, 584. 1857.

Cretaceous. Texas.

Caprina limestone, Marcou. Boston Soc. Nat. Hist., Proc., vol. viii, 1861-62, p. 89. 1861.

Cretaceous. Texas. Included in Upper Cretaceous.

Caprina chalk and limestone, Hill. Texas Geol. Surv., 1st Ann. Rept., pp. 124-126. 1890.

Cretaceous. Texas. Included in Fredericksburg division of Comanche series.

Caprina limestone, Hill. Geol. Soc. Am., Bull., vol. ii, pp. 503, 513. 1891.

Cretaceous. Texas.

Caprina limestone, Taff. Texas Geol. Surv., 2d Ann. Rept., pp. 718-719, 720. 1891.

Cretaceous. Texas. Included in Fredericksburg and Washita division.

Caprina limestone, Dumble and Cummins. Am. Geol., vol. ix, p. 349. 1892.

Cretaceous. Texas.

Caprina limestone, Hill. Artesian Invest., Final Rept., Ex. Doc. 41, 52d Cong., 1st sess., pt. iii, p. 87. 1892.

Cretaceous. Texas. Included in Trinity division.

Caprina limestone, Taff. Texas Geol. Surv., 3d Ann. Rept., pp. 340-343. 1892.

Cretaceous. Texas. Included in Fredericksburg division of Lower Cretaceous.

Caprina limestone, Taff. Texas Geol. Surv., 4th Ann. Rept., pp. 256-257. 1893.

Cretaceous. Texas. Included in Fredericksburg division of Lower Cretaceous.

**Caprotina** limestone, Shumard. St. Louis Acad. Sci., Trans., vol. i, pp. 583, 588. 1857.

Cretaceous. Texas.

Caprotina limestone, Marcou. Boston Soc. Nat. Hist., Proc., vol. viii, 1861-62, p. 89. 1861.

Cretaceous. Texas. Included in Upper Cretaceous. (Lower Cretaceous).

Caprotina limestone, Hill. Texas Geol. Surv., 1st Ann. Rept., pp. 127-128. 1890.

Cretaceous. Texas. Included in Washita division of Comanche series. Exact Syn. Austin marble.

Caprotina bed, Taff. Texas Geol. Surv., 2d Ann. Rept., pp. 719, 727. 1891.

Cretaceous. Texas. Included in Washita division.

**Cardiola** shale, Claypole. Am. Phil. Soc., Proc., vol. xxi, p. 230. 1884.

Devonian. Pennsylvania. Exact Syn. Portage.

**Cariboo** schists, Bowman. Can. Geol. Surv., new ser., vol. iii, pt. i, pp. 22C-25C. 1889.

British Columbia. Included in Lower Paleozoic.

**Carlile** shale, Gilbert. U. S. Geol. Surv., 17th Ann. Rept., pt. ii, p. 565. 1896.

Cretaceous. Colorado. Included in Benton group.

Carlile shale, Gilbert. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 36. 1897.

Cretaceous. Colorado. Included in Benton formation.

- Barlile shale, Hills.** U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 58. 1899.  
Cretaceous. Colorado.
- Barlile shale, Hills.** U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 68. 1900.  
Cretaceous. Colorado.
- Barlinville limestone, Worthen.** Economical Geol. of Ill., vol. i, p. 169, vol. iii, pp. 305, 488. 1882.  
Carboniferous. Illinois. Included in Coal Measures. Exact syn. Shoal Creek limestone.
- Barlinville limestone, Worthen.** Illinois Geol. Surv., vol. vii, pp. 19, 48. 1883.  
Carboniferous. Illinois. Included in Coal Measures.
- Barlyle limestone, Haworth.** Kansas Univ. Quart., vol. ii, p. 119. 1894.  
Carboniferous. Kansas.
- Barlyle limestone, Haworth and Piatt.** Kan. Univ. Quart., vol. ii, p. 117. 1894.  
Carboniferous. Kansas.
- Barlyle limestone, Haworth and Kirk.** Kan. Univ. Quart., vol. ii, pp. 109-110. 1894.  
Carboniferous. Kansas.
- Barlyle limestone, Kirk.** Kan. Univ. Geol. Surv., vol. i, p. 78. 1896.  
Carboniferous. Kansas.
- Barlyle limestone, Bennett.** Kan. Univ. Geol. Surv., vol. i, p. 98. 1896.  
Carboniferous. Kansas.
- Barlyle limestone, Haworth.** Kan. Univ. Geol. Surv., vol. i, pp. 133-134. 1896.  
Carboniferous. Kansas.
- Barlyle limestone, Haworth.** Kan. Univ. Geol. Surv., vol. i, p. 158. 1896.  
Carboniferous. Kansas.
- Barlyle limestone, Haworth.** Kan. Univ. Geol. Surv., vol. iii, p. 104. 1898.  
Carboniferous. Kansas. Exact syn. Garnett limestone.
- Barmanah Point beds, Merriam.** Univ. of Cal. Dept. of Geol., Bull., vol. ii, p. 102. 1896.  
Tertiary. British Columbia. Included in Miocene.
- Barmelo series, Lawson.** Univ. of Cal. Dept. of Geol., Bull., vol. i, pp. 1-59. 1893.  
Tertiary. California. Included in Eocene? Part. syn. Tejon?
- Barolinian bed, Conrad.** Am. Jour. Sci., 2d ser., vol. xlviii, p. 260. 1867.  
Tertiary. North and South Carolina.
- Barolinian, Heilprin.** Phil. Acad. Nat. Sci., Proc., 1882, p. 183-184. 1882.  
Included in Miocene. Includes Upper Atlantic Miocene. Exact syn. Sumpter.
- Barolinian, Heilprin.** Phil. Acad. Nat. Sci., Jour., vol. ix, pp. 119-120. 1884.  
Included in Tertiary. Includes Upper Atlantic Miocene. Exact syn. Sumpter.
- Barolinian marl, Dall.** U. S. Nat. Mus. Proc., vol. xviii, p. 31. 1895.  
Tertiary. North Carolina.
- Baroni series, Wall and Sawkins.** Geol. of Trinidad, pp. 41-45. 1860.  
Tertiary. Trinidad. Included in Newer Parian group.
- Baroni beds, Dall.** U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 341. 1898.  
Tertiary. Island of Trinidad. Included in Oligocene.
- Barribean group, Wall and Sawkins.** Geol. of Trinidad, pp. 13-33. 1860.  
Trinidad.
- Barrizzo Creek oyster bed, Orcutt.** Cal. State Min. Bur., 10th Ann. Rept., vol. x, p. 915, etc. 1890.  
Tertiary. California. Included in Miocene.
- Barrollton limestone, Williams.** Ark. Geol. Surv., 1892, vol. v, pp. 334-337. 1900.  
Carboniferous. Arkansas.
- Barter's Creek limestone, Safford.** Geol. of Tennessee, pp. 263-268. 1869.  
Silurian. Tennessee. Included in Trenton or Lebanon.
- Barter's Creek limestone, Wetherby.** Cin. Soc. Nat. Hist., Jour., vol. iii, no. ii, p. 147. 1880.  
Silurian. Kentucky.

- Cascade series**, Selwyn. Can. Geol. Surv., Rept. 1871-72. p. 60. 1872.  
British Columbia.
- Cascade series**, Dawson. Can. Geol. Surv., Rept. 1877-78, pp. 63B, 67B, etc. 1879.  
Carboniferous? British Columbia.
- Cascade sandstone**, White. 2d Pa. Geol. Surv., Rept. G<sup>5</sup>, pp. 74-79. 1881.  
Devonian. Pennsylvania. Included in Chemung.
- Cascade formation**, Wadsworth. Mich., Rept. State Board of Geol. Surv. for 1891-1892, pp. 63, 66, 84, 99. 1893.  
Archean, Michigan.
- Cascade formation**, Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 55, 56. 1899.  
Cretaceous. Montana.
- Caseyville sandstone**, Owen. Ky. Geol. Surv., vol. iii, p. 21. 1857.  
Carboniferous. Kentucky. Included in Coal Measures.
- Cashaqua shale**, Hall. N. Y. Geol. Surv., 4th Ann. Rept., pp. 390-391, 423. 1840.  
Devonian. New York.
- Cashaqua shale**, Hall. N. Y. Geol. Surv., 5th Ann. Rept., p. 165. 1841.  
New York.
- Cashaqua shale**, Hall. Geol. of New York, pt. iv, 4th Geol. Dist., pp. 18, 226-227. 1843.  
Paleozoic. New York. Included in Portage group.
- Cason limestone and shale**, Williams. Am. Jour. Sci., 3d ser., vol. xlvii, pp. 326-329. 1894.  
Silurian. Arkansas. Included in Upper Silurian.
- Cassville plant shale**, White. U. S. Geol. Surv., Bull. No. 65, p. 41. 1891.  
Carboniferous. West Virginia. Included in Permo-Carboniferous, Dunkard Creek series.
- Castle limestone**, Weed. U. S. Geol. Surv., 20th Ann. Rept., pt. iii, p. 293. 1900.  
Carboniferous. Montana. Included in Madison group.
- Castle Mountain group**, McConnell. Can. Geol. Surv., Rept., new ser., vol. ii, pp. 15D, 24D-29D. 1887.  
Cambro-Silurian. Canada.
- Castle Mountain group**, Dawson. Geol. Soc. Am., Bull., vol. ii, p. 168. 1891.  
Cambrian? British Columbia.
- Castle Mountain group**, McConnell. Can. Geol. Surv., new ser., vol. vii, p. 34C. 1896.  
Canada. Included in Lower Paleozoic.
- Catadupa**, Hill. Harvard Coll. Mus. of Comp. Zool., Bull., vol. xxxiv, pp. 58-61. 1899.  
Eocene. Jamaica. Included in Blue Mountain series, Cambridge formation.
- Cat Head beds**, Dowling. Ottawa Field Nat. Club, Trans., 1895-96, vol. xi, pp. 69-70. 1895-96.  
Cambro-Silurian. Canada.
- Catoctin schist**, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 10. 1894.  
Algonkian. Virginia, Maryland, West Virginia.
- Catoctin schist**, Keith. U. S. Geol. Surv., 14th Ann. Rept., pt. ii, p. 306. 1894.  
Virginia, Maryland.
- Catskill Mountain series**, Mather. N. Y. Geol. Surv., 4th Ann. Rept., pp. 227-235. 1840.  
Devonian. New York. Includes Nos. 8, 9, 10, and 11 of Pennsylvania survey.
- Catskill Mountain series**, Mather. N. Y. Geol. Surv., 5th Ann. Rept., pp. 75-85. 1841.  
Devonian. New York. Includes Montrose sandstone, Chemung group, Ithaca group, Sherburne flags, Hamilton group, Marcellus shales.
- Catskill group**, Vanuxem. Geol. of New York, pt. iii, pp. 186-194. 1842.  
Paleozoic. New York. Included in New York system. Includes Montrose and Oneonta sandstones, No. 9 Pennsylvania survey.



- Catskill shaly limestone, Vanuxem. Geol. of New York, pt. iii, pp. 120-122. 1842.  
Paleozoic. New York. Included in New York system. Includes Delthyris shaly limestone, Scutella limestone. Part. syn. No. 6, Pennsylvania survey.
- Catskill division, Mather. Geol. of New York, pt. i, pp. 299-316. 1843.  
Paleozoic. New York. Included in New York system. Includes Montrose and Oneonta sandstones, Old Red Sandstone Nos. ix, x, xi, xii, Pennsylvania survey.
- Catskill group, Emmons. Agriculture of New York, vol. i, pp. 193-197. 1846.  
Devonian. New York. Included in Catskill division of New York system.
- Catskill division, Emmons. Agriculture of New York, vol. i, pp. 187-197. 1846.  
Devonian. New York. Included in New York system. Includes Chemung, Portage, Ithaca and Catskill groups.
- Catskill shaly limestone, Owen. Am. Jour. Sci., 2d ser., vol. i, p. 50. 1846.  
Silurian. New York. Included in No. 6 Pennsylvania Survey, Helderberg series (or division) of the New York system. Includes Delthyris shaly limestone and Scutella limestone.
- Catskill group, Dawson. Am. Jour. Sci., 2d ser., vol. xxxv, pp. 314-319. 1863.  
Devonian. Canada. Exact Syn. Old Red Sandstone.
- Catskill, Newberry. Ohio Geol. Surv., vol. i, pt. i, p. 71. 1873.  
Devonian. Ohio.
- Catskill formation, Fontaine. Am. Jour. Sci., 3d ser., vol. vii, p. 578. 1874.  
Devonian. West Virginia.
- Catskill, Hotchkiss. A Geographical and Political Summary of Virginia, p. 22. 1876.  
Devonian. Virginia. Included in Devonian or Old Red Sandstone. Exact syn. Ponent (Formation ix-Rogers).
- Catskill, Ashburner. Am. Phil. Soc., Proc., vol. xvi, p. 525. 1877.  
Devonian. Appalachian region. Exact Syn. Ponent.
- Catskill, Ashburner. 2d Pa. Geol. Surv., Rept. F, pp. 217-220. 1878.  
Devonian. Pennsylvania. Exact syns. Ponent, Old Red Sandstone.
- Catskill, Newberry. Ohio Geol. Surv., vol. iii, p. 21. 1878.  
Carboniferous. Ohio, Pennsylvania.
- Catskill group, Stevenson. Am. Jour. Sci., 3d ser., vol. xv, pp. 423-430. 1878.  
Devonian. Pennsylvania.
- Catskill, Chance. 2d Geol. Surv. of Pa., Rept. G<sup>4</sup>, pp. 101-103. 1880.  
Devonian. Pennsylvania. Exact syn. No. ix, Ponent.
- Catskill, White. 2d Geol. Surv. of Pa., Rept. G<sup>5</sup>, pp. 9-73. 1881.  
Devonian. Pennsylvania. Includes Mount Pleasant and Elk Mountain shales, Cherry Ridge group, Honesdale sandstone, Montrose shale, Paupack sandstone, New Milford group, Starucca shale. Exact syn. No. ix.
- Catskill, Platt. 2d Pa. Geol. Surv., Rept. T, pp. 26-27. 1881.  
Devonian. Pennsylvania. Exact syn. No. ix.
- Catskill, White. 2d Pa. Geol. Surv., Rept. G<sup>6</sup>, pp. 91-104. 1882.  
Devonian. Pennsylvania. Includes Mount Pleasant shale, Elk Mountain sandstone, Cherry Ridge group, Honesdale sandstone, Montrose shale, Delaware River flags, New Milford shale, Starucca sandstone.
- Catskill, Stevenson. 2d Pa. Geol. Surv., Rept. T<sup>2</sup>, pp. 73-75. 1882.  
Devonian. Pennsylvania.
- Catskill, White. 2d Pa. Geol. Surv., Rept. G<sup>7</sup>, pp. 54-63. 1883.  
Devonian. Pennsylvania. Exact syn. No. ix.
- Catskill-Chemung, White. 2d Pa. Geol. Surv., Rept. G<sup>7</sup>, pp. 63-67. 1883.  
Devonian. Pennsylvania. Included in Nos. viii-ix.
- Catskill, Claypole. Am. Phil. Soc., Proc., vol. xx, p. 531. 1883.  
Devonian. Pennsylvania.



Catskill, Claypole. 2d Pa. Geol. Surv., Rept. F<sup>2</sup>, pp. 72-78. 1885.

Devonian. Pennsylvania. Includes Kings Mill sandstone and shale, Dellville sandstone.

Catskill, Ashburner. 2d Pa. Geol. Surv., Rept. R<sup>2</sup>, pp. 376-377. 1885.

Devonian. Pennsylvania. Exact syn. No. ix.

Catskill, White. 2d Pa. Geol. Surv., Rept. T<sup>3</sup>, pp. 88-99. 1885.

Devonian. Pennsylvania.

Catskill sandstone, Winslow. 2d Pa. Geol. Surv., Rept. 1886, pt. iv, pp. 1338, 1344, 1354, 1357, 1358, 1359, 1361, 1363. 1887.

Carboniferous. Pennsylvania. Exact syn. No. ix.

Catskill group, Miller. North American Geol. and Pal., p. 65. 1889.

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- Cauda-Galli grit**, White. 2d Pa. Geol. Surv., Rept. G<sup>6</sup>, pp. 121-122. 1882.  
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Tertiary. Nebraska. Included in Oligocene?

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- Chaffin** bed, Drake. Texas Geol. Surv., 4th Ann. Rept., pp. 410-412. 1893.  
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Maine.
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1895.  
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Carboniferous. Missouri. Included in Lower Carboniferous.

Chouteau group, Broadhead. Mo. Geol. Surv. Rept., 1873-74, pp. 26-65. 1874.

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Includes Chouteau limestone, Vernicular sandstone, Lithographic limestone.

Exact syns. Chemung group, Kinderhook group.

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Lower Carboniferous. Missouri. Exact syn. Waverly.

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Lower Carboniferous. Missouri. Included in Kinderhook beds.

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- Chouteau limestone, Keyes. *St. Louis Acad. Sci., Trans.*, vol. vii, p. 359. 1897.  
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Algonkian. Colorado. Included in Grand Canyon group.
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- Cimarron** series, Cragin. *Colo. College Stud.*, vol. vi, pp. 3, 18-48. 1896.  
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Carboniferous. Kansas. Included in Permian? Includes Kiger and Salt Fork divisions, comprising Big Basin sandstone, Hackberry shales, Day Creek dolomite, Red Bluff sandstones, Dog Creek shales, Cave Creek gypsum, Flower-pot shales, Cedar Hill sandstones, Salt Plain measures and Harper sandstones. Upper Permian.
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Silurian. Illinois.
- Cincinnati group, Newberry. Ohio Geol. Surv., Rept. Prog., 1869, p. 19. 1870.  
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Silurian. Ohio. Exact syn. Blue limestone.
- Cincinnati group, Newberry. Ohio Geol. Surv., Rept. Prog., p. 14. 1871.  
Silurian. Ohio.
- Cincinnati group, Shaw. Ill. Geol. Surv., vol. v, pp. 35-56, 65-66, 77-78, 98-99,  
110-111, 131-132, 152-154. 1873.  
Silurian. Illinois.
- Cincinnati group, Orton. Ohio Geol. Surv., vol. i, pt. i, pp. 367, 437. 1873.  
Silurian. Ohio. Includes Lebanon, Cincinnati, and Point Pleasant beds. Exact  
syns. Blue limestone, Hudson River.
- Cincinnati, Newberry. Ohio Geol. Surv., vol. i, pt. i, pp. 103, 116. 1873.  
Silurian. Ohio. Includes Lebanon, Cincinnati, and Point Pleasant beds.
- Cincinnati group, Miller. Cin. Quart. Jour. Sci., vol. i, pp. 97-115. 1874.  
Silurian. Ohio Valley. Included in Ordovician.
- Cincinnati group, Borden. Indiana Geol. Surv., 5th Ann. Rept. 1873, p. 137. 1874.  
Indiana.
- Cincinnati group, Broadhead. Mo. Geol. Surv., Rept., 1873-74, p. 28. 1874.  
Silurian. Missouri. Included in Lower-Silurian. Exact syns. Hudson River  
and Utica shales.
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Silurian. Ohio.
- Cincinnati group, Bradley. Am. Jour. Sci., 3d ser., vol. ix, p. 281. 1875.  
Silurian. Tennessee.
- Cincinnati group, Shaler. Ky. Geol. Surv., new ser., vol. iii, pp. 149-159. 1877.  
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Lower Silurian. Wisconsin.
- Cincinnati group, Newberry. Ohio Geol. Surv., vol. iii, p. 2. 1878.  
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- Cincinnati group, Orton. Ohio Geol. Surv., vol. iii, pp. 382, 400, 406. 1878.  
Silurian. Ohio. Exact syn. Blue limestone.
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- Cincinnati group, Foerste. Denison Univ. Sci. Lab., Bull., vol. i, p. 64, etc. 1885.  
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Ordovician. Ohio.
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- Cincinnati limestone and shale, Hall and Sardeson. *Geol. Soc. Am., Bull.*, vol. iii, pp. 332, 365. 1892.  
Silurian. Minnesota. Includes Maquoketa beds and Wykoff beds.
- Cincinnati group, Hubbard. *Indiana Acad. Sci., Proc.*, 1885-1891, p. 68. 1892.  
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- Cincinnati group, Hershey. *Science*, vol. xxii, p. 202. 1893.  
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- Cincinnati group, Kindle. *Indiana Dept. Geol. and Nat. Res.*, 22d Ann. Rept., 1897, p. 408. 1898.  
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Indiana.
- Cincinnati rocks, Ashley. *Indiana Dept. Geol. and Nat. Res.*, 23d Ann. Rept., 1898, p. 77. 1899.  
Lower Silurian. Indiana.
- Cincinnati, Clarke and Schuchert. *Science*, new ser., vol. x, pp. 876-877. 1899.  
Silurian. New York. Includes Utica shale, Lorraine beds, Richmond beds.
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Carboniferous. Texas. Included in Coal Measures.
- Cisco division, Drake. *Texas Geol. Surv.*, 4th Ann. Rept., pp. 402-421. 1893.  
Carboniferous. Texas. Includes Santa Anna branch, No. 18, Horse Creek, Watts Creek, Camp Colorado, No. 13, Stockwether bed, Coon Mountain, Camp Creek, Saddle Creek, Waldrip, Chaffin, Parks Mountain, Lohn, Speck Mountain, Bellerophon, and Trickham beds.
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Algonkian? Tennessee. Included in Ocoee series.

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Mississippi. Included in Eocene.

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Eocene. Mississippi. Includes Siliceous Claiborne, Lignitic clays and sands of Northern Clarke County? Part. syns. Buhrstone, Claiborne, etc.

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Tertiary. Alabama.

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Tertiary.

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Tertiary. Alabama.

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Tertiary. Alabama.

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Tertiary. Alabama. Included in Middle Eocene.

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Tertiary. Georgia.

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Tertiary. Georgia. Included in Eocene.

Claiborne, Langdon. Geol. Soc. Am., Bull., vol. ii, p. 588. 1891.

Tertiary. Alabama. Included in Middle Eocene.

Claiborne division, Spencer. Ga. Geol. Surv., 1st Rept. Prog., 1890-91. 1891.

Tertiary. Georgia. Included in Middle Eocene.

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Tertiary. Alabama, Mississippi. Included in Eocene.

Claiborne stage, Harris. Ark. Geol. Surv., 1892, vol. ii, p. 87. 1892.

Tertiary. Arkansas. Included in Eocene series.

- Claiborne, Smith. Ala. Geol. Surv., Bull., No. 2, pp. 53, 62. 1892.  
Tertiary. Alabama.
- Claiborne, Smith, Johnson, and Langdon. Ala. Geol. Surv., Geol. of Coastal Plain of Alabama, pp. 122, 232, 385, 492, 494. 1894.  
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- Claiborne stage, Lower, Vaughan. Am. Geol., vol. xv, p. 210. 1895.  
Tertiary. Louisiana. Included in Eocene. Includes Mansfield group, Arcadia clays.
- Claiborne, Lower, Vaughan. U. S. Geol. Surv., Bull. No. 142, p. 15. 1896.  
Tertiary. Louisiana. Included in Eocene. Includes Jackson in part, Arcadia, Upper Lignitic in part, Marine Claiborne, Lower Claiborne in part, and Mansfield.
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- Claiborne, Lower, Vaughan. U. S. Geol. Surv., Bull. No. 142, p. 15. 1896.  
Tertiary. Louisiana. Included in Eocene. Includes *Ostrea selkeformis*, Lisbon, Buhrstone, Calcareous and Siliceous Claiborne beds, Lerch's Jackson Arcadia, Upper Lignitic, Marine Claiborne, and Lower Lignitic, Mansfield group.
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- Claiborne stage, lower, Harris and Veatch. La. State Exp. Sta., pt. v, p. 73. 1899.  
Tertiary. Louisiana. Included in Eocene.
- Claibornian stage, Vaughan. U. S. Geol. Surv., Mon., vol. xxxix, p. 27. 1900.  
Tertiary. Gulf States.
- Clarion group, Rogers.** Geol. of Pa., vol. ii, pp. 490, 501, 572. 1858.  
Carboniferous. Pennsylvania. Included in Coal Measures.
- Clarion sandstone, Stevenson.** 2d Pa. Geol. Surv., Rept. K<sup>3</sup>, p. 43. 1878.  
Carboniferous. Pennsylvania. Included in Lower Productive series. Exact syn. Piedmont sandstone.
- Clarion sandstone, Platt.** 2d Pa. Geol. Surv., Rept. H<sup>5</sup>, p. 323. 1880.  
Carboniferous. Pennsylvania.
- Clarion group, Chance.** Pa. Geol. Surv., Rept. V<sup>2</sup>, pp. 49-56. 1880.  
Carboniferous. Pennsylvania. Included in Lower Productive Measures.
- Clarion coal, White.** U. S. Geol. Surv., Bull. No. 65, p. 175. 1891.  
Carboniferous. Ohio, Pennsylvania, West Virginia. Included in Lower Coal Measures, Allegheny River series. Includes Upper and Lower Clarion. Part. syn. Scrub-grass coal.
- Clarion group, White.** Geol. Soc. Am., Bull., vol. xi, pp. 148-150. 1900.  
Carboniferous. Pennsylvania. Included in Allegheny series.
- Clark, Campbell.** U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 26. 1896.  
Carboniferous. Virginia, West Virginia. Included in Pottsville series.
- Clark formation, White.** U. S. Geol. Surv., 20th Ann. Rept., pt. ii, p. 814. 1900.  
Carboniferous. Virginia, West Virginia.
- Clark County** Littorals, Hill. Ark. Geol. Surv., 1888, vol. ii, pp. 79, 80. 1888.  
Cretaceous. Arkansas. Included in Upper Arenaceous beds.
- Clarke's Mill shale, Lesley.** 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 969-970, 972. 1892.  
Silurian. Pennsylvania. Included in No. vi. Includes Pentamerus limestone, Delthyris shale.
- Clarksburg limestone, White.** U. S. Geol. Surv., Bull. No. 65, p. 88. 1891.  
Carboniferous. Pennsylvania, West Virginia. Included in Barren Measures, Elk River series.



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- Clarksburg formation, Bayley. U. S. Geol. Surv., Mon., vol. xxviii, pp. 460-486. 1897.
- Algonkian. Michigan. Included in Upper Marquette series.
- Clay** marl formation, Clark. N. J. State Geol., Rept., 1892, pp. 186-190. 1893.
- Cretaceous. New Jersey.
- Clayton**, Smith, Johnson, and Langdon. Ala. Geol. Surv., Geol. of Coastal Plain of Alabama, pp. 192, 198, 240, 413, 489. 1894.
- Tertiary. Alabama. Included in Eocene. Exact syn. Midway.
- Clear Creek** limestone, Worthen. Ill. Geol. Surv., vol. i, pp. 126-129. 1866.
- Devonian and Upper Silurian. Illinois. Part. syn. Lower Helderberg limestone and Oriskany sandstone of New York.
- Clear Creek, limestone, Worthen. Ill. Geol. Surv., vol. iii, pp. 24-25, 37-38. 1868.
- Devonian. Illinois. Included in Oriskany group.
- Clear Creek sandstone, Broadhead. Mo. Geol. Surv., Rept. 1873-74, pp. 69, 100. 1874.
- Carboniferous. Missouri. Included in Coal Measures.
- Clear Creek bed, Drake. Texas Geol. Surv., 4th Ann. Rept., pp. 392-394. 1893.
- Carboniferous. Texas. Included in Canyon division.
- Clear Creek limestone, Keyes. Mo. Geol. Surv., vol. iv, pp. 30, 41, 42. 1894.
- Silurian. Missouri. Included in Niagara stage.
- Clear Creek, Wheeler. Mo. Geol. Surv., vol. xi, p. 41. 1896.
- Silurian. Missouri.
- Clear Creek limestone, Schuchert. Geol. Soc. Am., Bull., vol. xi, p. 317. 1900.
- Devonian. Illinois. Included in Oriskany.
- Clear Fork**, Dumble. Texas Geol. Surv., 1st Ann. Rept., pl. iii, p. lxix. 1890.
- Permian. Texas.
- Clear Fork beds, Cummins. Texas Geol. Surv., 1st Ann. Rept., p. 188. 1890.
- Permian. Texas.
- Clear Fork beds, Cummins. Texas Geol. Surv., 2d Ann. Rept., pp. 401-402. 1891.
- Permian. Texas.
- Clear Fork division, Cummins. Texas Geol. Surv., 4th Ann. Rept., pp. 226-228. 1893.
- Permian. Texas.
- Clearwater** shale, McConnell. Can. Geol. Surv., new ser., vol. v, pt. i, pp. 30D-32D, 55D-58D. 1893.
- Cretaceous. Canada. Included in Colorado group.
- Clepsydrops** shale, Cope. U. S. Geol. and Geog. Surv. of Terr., Bull., vol. v, pp. 51-52. 1879.
- Carboniferous. Illinois, Indiana.
- Clermont** limestone, Ashburner. 2d Pa. Geol. Surv., Rept. R<sup>2</sup>, pp. 378-379. 1885.
- Carboniferous. Pennsylvania.
- Cleveland** shale, Newberry. Ohio Geol. Surv., Rept. Prog. 1869, pp. 19, 21. 1870.
- Carboniferous. Ohio.
- Cleveland shale, Newberry. Ohio Geol. Surv., Rept. Prog., 1869, p. 22. 1871.
- Carboniferous. Ohio. Included in Waverly group.
- Cleveland shale, Read. Ohio Geol. Surv., vol. i, pp. 486, 514, 525. 1873.
- Carboniferous. Ohio. Included in Waverly.
- Cleveland shale, Newberry. Ohio Geol. Surv., vol. i, pt. i, pp. 189, 208. 1873.
- Carboniferous. Ohio. Included in Waverly.
- Cleveland shale, Newberry. Ohio Geol. Surv., vol. ii, pp. 92-95, 188, 213. 1874.
- Carboniferous. Ohio. Included in Waverly, Lower Carboniferous.
- Cleveland shale, Winchell. Ohio Geol. Surv., vol. ii, pp. 242, 263, 282. 1874.
- Carboniferous. Ohio. Included in Waverly.

- Cleveland shale, Lesley. 2d Pa. Geol. Surv., Rept. I, p. 75. 1875.  
Devonian. Ohio, Pennsylvania. Exact syn. No. viii.
- Cleveland shale, Hicks. Am. Jour. Sci., 3d ser., vol. xvi, p. 70. 1878.  
Carboniferous. Ohio. Included in Waverly.
- Cleveland shale, Orton. Rev. of Strat. Geol. of eastern Ohio, p. 2. 1880.  
Devonian. Ohio.
- Cleveland shale, Orton. Ohio Geol. Surv., vol. vi, pp. 4, 26. 1888.  
Devonian. Ohio. Included in Ohio shale.
- Cleveland shale, Herrick. Denison Univ. Sci. Lab., Bull., vol. iv, p. 106. 1888.  
Ohio.
- Cleveland shale, Orton. Ohio Geol. Surv., vol. vii, pp. 4, 21, 22. 1893.  
Devonian. Ohio. Included in Ohio shale.
- Cleveland County** red sands, Hill. Ark. Geol. Surv., 1888, vol. ii, pp. 58-59. 1888.  
Tertiary. Arkansas. Included in Camden series. Part. syn. Claiborne beds of Alabama and Mississippi.
- Click** series, Dumble. Texas Geol. Surv., 1st Ann. Rept., pl. iii, p. lvii. 1890.  
Archean. Texas. Included in Fernandan system.
- Cliff** limestone, Locke. Ohio Geol. Surv., 2d Ann. Rept., by W. W. Mather, p. 211. 1838.  
Silurian. Ohio.
- Cliff** limestone, Owen. Rept. on Geol. of Iowa, Wis., and Ill., p. 19. 1839.  
Mississippi Valley.
- Cliff** limestone, Clapp. Phil. Acad. Nat. Sci., Proc., vol. i, pp. 178, 316. 1843.  
Silurian. Ohio. Includes Niagara, Marcellus.
- Cliff** limestone, Daniels. Wis. Geol. Surv., Rept., 1853, p. 12. 1854.  
Silurian. Wisconsin. Includes Corraline beds.
- Cliff** limestone, Newberry. Ohio Geol. Surv., Rept. Prog., 1869, p. 20. 1870.  
Ohio. Includes Salina and Lower Helderberg formations with two other limestones and a bed of sandstone overlying.
- Cliff** limestone, Orton. Ohio Geol. Surv., Rept. Prog., 1869, pp. 141, 150. 1870.  
Ohio. Includes Clinton and Niagara groups.
- Cliff** limestone, Newberry. Ohio Geol. Surv., Rept. Prog., 1869, p. 15. 1870.  
Silurian. Ohio. Includes Salina and Water lime.
- Cliff** limestone, Orton. Geol. Surv. Ohio, Rept. Prog., 1870, p. 295. 1871.  
Silurian. Ohio.
- Cliff** limestone, Newberry. Ohio Geol. Surv., p. 15. 1871.  
Silurian. Ohio. Includes Salina and Lower Helderberg limestones.
- Cliff** limestone, Foerste. Denison Univ. Sci. Lab., Bull., vol. i, p. 64. 1885.  
Ohio.
- Clifton** limestone, Safford and Killebrew. Elementary Geol. of Tenn., pp. 144-146. 1876.  
Silurian. Tennessee. Included in Upper Silurian. Exact syn. Meniscus limestone.
- Clinch Mountain** sandstone, Safford. Geol. Recon. in the State of Tenn., 1st Rept., p. 157. 1856.  
Silurian(?). Tennessee. Included in Dyestone and Gray limestone group.
- Clinch Mountain** sandstone, Safford. Geol. of Tenn., pp. 292-299. 1869.  
Silurian. Tennessee. Included in Niagara group. Part. syn. Medina sandstone of New York.
- Clinch Mountain** sandstone, Killebrew and Safford. Resources of Tenn., p. 37. 1874.  
Silurian. Tennessee. Included in Niagara period.
- Clinch** sandstone, Campbell. Geol. Soc. Am., Bull., vol. v, pp. 171, 176. 1894  
Silurian. Virginia. Included in Medina, Oneida.

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Tertiary. Texas, New Mexico.

- Diamond Peak** quartzite, Hague. U. S. Geol. Surv., 3d Ann. Rept., pp. 253, 268. 1883.  
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- Dinosaur** sands, White. Phil. Acad. Nat. Sci., Proc., 1887, p. 40. 1887.  
Texas. Included in Cretaceous, Comanche.
- Dismal** formation, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 44. 1897.  
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- Dockum** beds, Hill. Texas Geol. Surv., 1st Ann. Rept., p. 189. 1890.  
Juratrias(?). Texas.
- Dockum**, Dumble. Texas Geol. Surv., 1st Ann. Rept., pl. iii, p. xxi. 1890.  
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- Dockum** beds, Cummins. Texas Geol. Surv., 2d Ann. Rept., pp. 424-429. 1891.  
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- Dockum** beds, Drake. Texas Geol. Surv., 3d Ann. Rept., pp. 229-247. 1892.  
Juratrias. Texas. Included in Triassic.
- Dockum** beds of Dumble, Simpson. Proc. U. S. Nat. Mus., vol. xviii, p. 381. 1895.  
Triassic. Texas.
- Doe Run** limestone, Frazer. 2d Pa. Geol. Surv., Rept. C<sup>4</sup>, pp. 70, 304, 307. 1883.  
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- Dog Creek** shales, Cragin. Colo. College Stud., vol. vi, pp. 3, 39. 1896.  
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- Dog Creek** shales, Prosser. Kan. Univ. Geol. Surv., vol. ii, pp. 94-95. 1897.  
Lower Cretaceous. Kansas, Oklahoma. Included in Cimarron series.
- Dog Creek** formation, Cragin. Am. Geol., vol. 19. p. 358. 1897.  
Permian. Kansas, Oklahoma. Included in Salt Fork division of Cimarron series.  
Includes Chapman dolomite and Ampitheater dolomite. Exact syn. Stony Hills formation.
- Dolores** formation, Cross. U. S. Geol. Surv. Geol. Atlas of U. S., Folio No. 57. 1899.  
Juratrias. Colorado.
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- Doré** conglomerate, Coleman. Geol. Soc. Am., Bull., vol. xi, pp. 109-110. 1900.  
Archean. Ontario. Included in Huronian.
- Dorset** limestone, Hitchcock. Boston Soc. Nat. Hist., Proc., vol. vii, 1859-61, p. 237. 1860.  
Vermont. Included in Upper Silurian or Devonian.
- Dorset** limestone, Hitchcock. Elementary Geology, p. 411. New ed. 1863.  
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- Dotson** sandstone, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 44. 1897.  
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- Double Mountain** beds, Cummins. Texas Geol. Surv., 1st Ann. Rept., pp. 188-189. 1890.  
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- ry Bone limestone, Prosser. Geol. Soc. Am., Bull., vol. vi, pp. 29, 36. 1894.  
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- ry Creek shale, Weed. U. S. Geol. Surv., 20th Ann. Rept., pt. iii, p. 286. 1900.  
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- un limestone, Hay. Kan. Acad. Sci., Trans., vol. x, p. 7. 1887.  
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- undee limestone, Lane. Mich. Geol. Surv., Rept. State Board for 1891-92, p. 66.  
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Carboniferous. Ohio, Pennsylvania, and West Virginia. Included in Permo-

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Dunvegan group, Dawson. Can. Geol. Surv., Rept. 1879-80, pp. 116B-122B. 1881.

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Includes Dunvegan sandstones. Exact syns. Lower sandstones and shales.

Part. syns. Belly River series, Bear River formation, Niobrara.

Dunvegan group, McConnell. Can. Geol. Surv., new ser., vol. v, pt. i, pp. 50D, 54D-55D. 1893.

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Tertiary. North Carolina.

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Devonian and Silurian. Tennessee. Included in Upper Silurian and Devonian.

Includes Sneedville limestone and Clinch Mountain limestone.

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Silurian. Tennessee. Included in Niagara group. Part. syn. Clinton. [Medina in part (?).]

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Silurian. Tennessee. Included in Niagara period.

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Eagle formation, Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 55. 1899.

Cretaceous. Montana.

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Cretaceous. Texas. Included in Gulf series.

Eagle Ford shales, White. Phil. Acad. Nat. Sci., Proc., 1887, p. 40. 1887.

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Cretaceous. Texas. Included in Black Prairie series.

Eagle Ford shale, Hill. Texas Geol. Surv., 1st Ann. Rept., pp. 111-112. 1890.

Cretaceous. Texas. Included in Black Prairie series.

Eagle Ford formation, White. U. S. Geol. Surv., Bull. No. 82, p. 122. 1891.

Cretaceous. Texas.

Eagle Ford division, Taff. Texas Geol. Surv., 2d Ann. Rept., pp. 734-735. 1891.

Cretaceous. Texas. Included in Upper Cretaceous. Exact syn. Benton shale.



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1st sess., Ex. Doc. 41. 1892.  
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Cretaceous. Texas. Included in Upper Cretaceous.
- agle Ford shale, Hill. Geol. Soc. Am., Bull., vol. v, pp. 297, 305. 1894.  
Cretaceous. Texas.
- agle Ford stage, Dumble. Geol. Soc. Am., Bull., vol. vi, p. 377. 1895.  
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- agle Ford shales, Hill and Vaughan. U. S. Geol. Surv., 18th Ann. Rept., pt. ii,  
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Cretaceous. Texas. Exact syn. Ripley formation.
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Miguel, Coal series, Escondido beds.
- agle Pass, Hill. Geol. Soc. Am., Bull., vol. iii, p. 94. 1892.  
Cretaceous. Texas.
- agle Pass formation, Hill and Vaughan. U. S. Geol. Surv., 18th Ann. Rept., pt. ii,  
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Cretaceous. Texas. Included in Montana division of Gulf series.
- agle Pass formation, Vaughan. U. S. Geol. Surv., Bull., No. 164, p. 21. 1900.  
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- arlton limestone, Haworth. Kan. Univ. Geol. Surv., vol. iii, pp. 51, 103. 1898.  
Carboniferous. Kansas. Included near summit of Thayer shale.
- ast Lee gneiss, Emerson. U. S. Geol. Surv., Geol. Atlas of U. S., Hawley sheet.  
1892.  
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- ast Lee limestone, Emerson. U. S. Geol. Surv., Bull. No. 159, p. 50. 1899.  
Pre-Cambrian. Massachusetts.
- astern sandstone, Hubbard. Mich. Geol. Surv., vol. vi, pt. ii, p. 110. 1878.  
Algonkian. Michigan.
- astern sandstone, Irving and Chamberlin. U. S. Geol. Surv., Bull. No. 23. p. 106.  
1885.  
Cambrian. Michigan. Exact syn. Potsdam.
- astern sandstone, James. Cin. Soc. Nat. Hist., Jour., vol. xvii, No. ii, p. 127.  
1894.  
Ordovician.
- astern sandstone, Hubbard. Mich. Geol. Surv., vol. vi, pt. ii, pp. 110-125. 1898.  
Michigan.
- aton beds, Foerste. Denison Univ. Sci. Lab., Bull., vol. iii, p. 8. 1888.  
Ohio.

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Cambrian. Wisconsin. Included in Potsdam sandstone.
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Tertiary. Florida. Included in Miocene.
- Edison** gneiss, Wolff and Brooks. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 439. 1898.  
Pre-Cambrian. New Jersey.
- Edmonton** series, Tyrrell. Can. Geol. Surv., new ser., vol. ii, pp. 74E-75E, 110E, 118E, 127E, 131E-135E, 137E-138E, 1887.  
Canada. Included in Laramie.
- Edwards** limestone, Hill and Vaughan. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, pp. 227-235. 1898.  
Cretaceous. Texas. Included in Fredericksburg division of Comanche series.  
Exact syn. Caprina limestone, Barton Creek limestone.
- Edwards formation, Hill and Vaughan. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 42. 1898.  
Cretaceous. Texas. Included in Comanche series.
- Edwards limestone, Vaughan. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 64. 1900.  
Cretaceous. Texas. Included in Comanche series.
- Egremont** limestone, Hobbs. Jour. of Geol., vol. i, pp. 727-728. 1893.  
Ordovician. Massachusetts. Included in Mount Washington series.
- Einstine** sandstone, Swallow and Hawn. Geol. of Miami County, Kans. 1865.  
Carboniferous. Kansas. Included in Coal Measures.
- Elevator B** sandstone, Hall. Minn. Acad. Nat. Sci., Bull., vol. ii, no. i, p. 132. 1889.  
Cambrian. Minnesota. Included in Shakopee.
- Elevator sandstone, Hall and Sardeson. Geol. Soc. Am., Bull., vol. iii, p. 341. 1892.  
Ordovician(?). Minnesota. Included in Magnesian series.
- Elgin** sandstone, Haworth. Kan. Univ. Geol. Surv., vol. iii, p. 64. 1898.  
Carboniferous. Kansas.
- Elk** group, Carll. 2d Pa. Geol. Surv., Rept. 1<sup>5</sup>, pp. 78-79. 1890.  
Devonian. Pennsylvania.
- Elk Creek** beds, Cragin. Am. Geol., vol. xvi, p. 366. 1895.  
Cretaceous. Kansas. Includes Lanphier beds, Stokes sandstone.
- Elk Falls** limestone, Haworth. Kan. Univ. Geol. Surv., vol. iii, pp. 65-66, 105. 1898.  
Carboniferous. Kansas. Includes Lecompton and Deer Creek limestone.
- Elkgarden**, Darton and Taff. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 28. 1896.  
Carboniferous. West Virginia and Maryland.
- Elkgarden formation, Clark. Md. Geol. Surv., vol. i, p. 156, 187. 1897.  
Carboniferous. Maryland.
- Elk Lick** limestone, White. 2d Pa. Geol. Surv., Rept. Q, p. 29. 1878.  
Carboniferous. Pennsylvania. Included in Lower Barren series.
- Elk Lick limestone, White. U. S. Geol. Surv. Bull. No. 65, p. 90. 1891.  
Carboniferous. Pennsylvania. Included in Barren Measures, Elk River series.
- Elk Lick Coal, White. U. S. Geol. Surv., Bull. No. 65, p. 89. 1891.  
Carboniferous. Ohio, Pennsylvania, West Virginia. Included in Barren Measures  
Elk River series.
- Elk Mountain** shale, White. 2d Pa. Geol. Surv., Rept. G<sup>5</sup>, p. 64. 1881.  
Devonian. Pennsylvania. Included in Catskill.
- Elk Mountain gray shale, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, p. 157. 1892.  
Devonian. Pennsylvania. Included in Catskill, No. ix.

- Elk Mountain sandstone and shale, Prosser. U. S. Geol. Surv., Bull. No. 120, p. 78. 1894.
- Devonian. New York, Pennsylvania. Included in Catskill (Upper Devonian).
- Elk River** series, White. U. S. Geol. Surv., Bull. No. 65, p. 70. 1891.
- Carboniferous. Ohio, Pennsylvania, and West Virginia. Includes Pittsburg limestone, Connellsville sandstone, Clarksburg limestone, Morgantown sandstone, Elk Lick limestone, Crinoidal, Green fossiliferous or Ames limestone, Red Shale beds, Cambridge limestone, Irondale limestone, Mahoning sandstone and limestone, and Kanawha black flint. Exact syn. Barren Measures.
- Elk River series, White. Geol. Soc. Am., Bull., vol. iii, p. 189. 1892.
- Upper Carboniferous. West Virginia. Exact syn. Barren Measures.
- Elk River series, White. West Virginia Geol. Surv., vol. i, p. 201. 1899.
- Carboniferous. West Virginia. Exact syn. Barren Measures.
- Ellensburg** sandstone, Russell. U. S. Geol. Surv., 20th Ann. Rept., pt. ii, pp. 127-128. 1900.
- Tertiary. Washington. Included in Miocene.
- Ellicottsville** conglomerate, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, p. 1531. 1892.
- Devonian. Pennsylvania. Included in Venango.
- Elliott Creek** bed, Drake. Texas Geol. Surv., 4th Ann. Rept., p. 376. 1893.
- Carboniferous. Texas. Included in Strawn division.
- Ellis** limestone, Iddings and Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 1. 1894.
- Juratrias. Montana.
- Ellis, Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 30. 1896.
- Juratrias. Wyoming.
- Ellis, Peale. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 24. 1896.
- Juratrias. Montana.
- Ellis formation, Weed. U. S. Geol. Surv., 18th Ann. Rept., pt. iii, pp. 477-478. 1898.
- Juratrias. Montana.
- Ellis formation, Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 55, 56. 1899.
- Juratrias. Montana.
- Ellis formation, Iddings and Weed. U. S. Geol. Surv., Mon., vol. xxxii, pt. ii, pp. 149-164. 1899.
- Juratrias. Yellowstone Park.
- Elm Creek** bed, Drake. Texas Geol. Surv., 4th Ann. Rept., p. 424. 1893.
- Carboniferous. Texas. Included in Albany division.
- Elmont** limestone, Beede. Kan. Acad. Sci., Trans., vol. xv, p. 30. 1898.
- Carboniferous. Kansas.
- Empire** beds, Dall. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 308. 1898.
- Tertiary. Oregon. Included in Miocene. Exact syn. Astoria sandstones.
- Empire formation, Diller. U. S. Geol. Surv., 19th Ann. Rept., pt. iii, p. 319. 1899.
- Tertiary. Oregon. Included in Miocene.
- Empire shale, Walcott. Geol. Soc. Am., Bull., vol. x, pp. 199, 207. 1899.
- Algonkian, Pre-Cambrian. Montana. Included in Belt terrane.
- Emporia** limestone, Kirk. Kan. Univ. Geol. Surv., vol. i, p. 80. 1896.
- Carboniferous. Kansas.
- Encrinal** limestone, Hall. N. Y. Geol. Surv., 3d Ann. Rept., p. 298. 1839.
- Devonian. New York.
- Encrinal limestone, Hall. Geol. of New York, pt. iv, 4th Geol. Dist., pp. 18, 187. 1843.
- Paleozoic. New York. Included in Hamilton group.

Encrinal limestone, Hall. Geol. of New York, pt. iv, 4th Geol. Surv., pp. 18, 145. 1843.

Paleozoic. New York. Included in New York system. Includes Scutella limestone. Part. syn. No. 6, Pennsylvania survey.

Encrinal limestone, Emmons. Agriculture of New York, vol. i, p. 168. 1846.

New York. Included in Helderberg division of New York system.

Encrinal limestone, Hopkins. Ark. Geol. Surv., 1890, vol. iv, p. 52. 1890.

Silurian. Arkansas. Included in Lower Helderberg.

Encrinal limestone, Grabau. Buffalo Soc. Nat. Hist., Bull., vol. vi, pp. 30-32. 1898.

Devonian. New York.

**Encrinital** limestone, Shumard. Mo. Geol. Surv., 1st and 2d Ann. Repts., pt. ii, pp. 171, 181, 1855.

Carboniferous. Missouri.

Encrinital limestone, Swallow. Mo. Geol. Surv., 1st and 2d Ann. Repts., pp. 97, 175, 194. 1855.

Carboniferous. Missouri. Included in Mountain or Lower Carboniferous limestone.

Encrinital limestone, Meek. Mo. Geol. Surv., 1st and 2d Ann. Repts., pt. ii, p. 98. 1855.

Carboniferous. Missouri.

Encrinital limestone, Shumard. Mo. Geol. Surv., Repts., 1855-1871, pp. 294, 305. 1873

Carboniferous. Missouri. Included in Lower Carboniferous.

Encrinital limestone, Broadhead. Mo. Geol. Surv., Rept., 1855-1871, pp. 43, 71. 1873.

Carboniferous. Missouri. Included in Lower Carboniferous. Exact syn. Burlington limestone.

Encrinital limestone, Meek. Mo. Geol. Surv., Repts., 1855-1871, pp. 140, 173. 1873

Carboniferous. Missouri. Included in Lower Carboniferous.

Encrinital limestone, Broadhead. Mo. Geol. Surv., Repts., 1873-74, pp. 25, 67, 183. 1874.

Carboniferous. Missouri. Included in Lower Carboniferous, Mountain limestone. Exact syn. Burlington.

Encrinital limestone, Broadhead. Mo. Geol. Surv., Repts., 1873-74, pp. 25, 67. 1874

Lower Carboniferous. Missouri. Exact syn. Burlington limestone.

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Carboniferous. Iowa. Included in Mississippian series, Kinderhook.

English River gritstones, Bain. Iowa Geol. Surv., vol. v, p. 134. 1896.

Carboniferous. Iowa. Included in Kinderhook.

**Eolian** limestone, Hitchcock. Geol. of Vermont, vol. i, pp. 396-419. 1861.

Cambrian. Vermont. Exact syns. Granular limestone, Berkshire limestone, Stockbridge limestone, Dorset limestone.

Eolian limestone, Hitchcock. Geol. of Vermont, vol. i, pp. 394-395, 419-424. 1861

Cambrian. Vermont. Exact syns. Berkshire limestone, Stockbridge limestone

Eolian limestone, Hitchcock. Geol. of Maine, Prelim. Rept., vol. ii, pp. 245-256. 1862.

Cambrian. Maine. Exact syn. Stockbridge limestone.

Eolian limestone, Crosby. Rept. on Geol. Map of Mass., p. 40. 1876.

Pre-Cambrian.

Eolian limestone, Dana. Am. Jour. Sci., 3d ser., vol. xiii, p. 414. 1877.

Silurian. Vermont. Part. syns. Lower Calciferous, Quebec, Chazy, Black River, Trenton.

Eolian limestone, Hitchcock. Geol. Soc. Am., Bull., vol. i, p. 513. 1889.

Ordovician(?). Vermont.

Eolian, Walcott. Geol. Soc. Am., Bull., vol. ii, p. 502. 1891.

Ordovician(?). Quebec. Included in Quebec group.



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Included in Eocene.
- Eu-Lignitic**, Heilprin. Phil. Acad. Nat. Sci., Jour., vol. ix, p. 116. 1884.  
Included in Tertiary-Eocene. Exact syns. Marlborough and Piscataway beds of Maryland(?). Shark River deposits of New Jersey.
- Equus** beds, Cope. U. S. Geol. and Geog. Surv. of Terr., Mon., vol. iii, pp. 19-20. 1881.  
Tertiary. Included in Pliocene.
- Equus** beds, Dumble. Jour. of Geol., vol. ii, pp. 563-564. 1894.  
Pleistocene. Texas.
- Equus** beds, Scott. Geol. Soc. Am., Bull., vol. v, p. 594. 1894.  
Pleistocene. Nebraska.
- Equus** beds, Dall. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 336. 1898.  
Pleistocene.
- Erian**, Clarke and Schuchert. Science, new ser., vol. x, pp. 876-877. 1899.  
Devonian. New York. Includes Marcellus shale, Hamilton beds.
- Erie** division, Vanuxem. Geol. of New York, pt. iii, pp. 170-171. 1842.  
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- Erie** division, Mather. Geol. of New York, pt. i, pp. 317-323. 1843.  
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- Erie**, Emmons. Agriculture of New York, vol. i, pp. 180-186. 1846.  
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- Erie** clays, Newberry. Ohio Geol. Surv., Rept. Prog., 1869, p. 26. 1870.  
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- Erie** shale, Newberry. Ohio Geol. Surv., Rept. Prog., 1869, p. 20. 1870.  
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- Erie** clay, Newberry. Ohio Geol. Surv., vol. i, pt. i, p. 174. 1873.  
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- Erie** shale, Newberry. Ohio Geol. Surv., vol. ii, pp. 188, 213. 1874.  
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- Erie** shale, Lesley. 2d Pa. Geol. Surv., Rept. I, pp. 76-82. 1875.  
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- Erie shale, Read. Ohio Geol. Surv., vol. iii, p. 306. 1878.  
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- Ferruginous sandstone**, Shumard. Mo. Geol. Surv., Rept. 1855-1871, pp. 77, 279, 292, 320. 1873.  
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- Ferruginous sandstone**, Broadhead. Mo. Geol. Surv., Repts., 1873-74, pp. 24, 68, 185. 1874.  
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- Flathead sandstone**, Weed. U. S. Geol. Surv., 20th Ann. Rept., pt. iii, p. 285. 1900.  
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- Flat Rock stone**, Cox. Indiana Geol. Surv., 8th, 9th, and 10th Ann. Repts. for 1876-77-78, p. 89. 1879.  
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Virginia. Exact syn. Primal.
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Cambro-Silurian. Maryland. Includes Chazy and Calciferous. Exact syns. Valley or Shenandoah limestone, Auroral.
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Silurian. Virginia. Includes Hudson River, Utica, and Trenton. Exact syn. Matinal of Pennsylvania.
- Formation No. 4, Rogers. Rept. for 1837 and Geol. of Virginias, p. 175. 1884.  
Silurian. Virginia. Exact syn. Medina, Levant of Pennsylvania.
- Formation No. 5, Rogers. Rept. for 1837 and Geol. of Virginias, p. 177. 1884.  
Silurian. Virginia. Included in Upper Silurian. Includes Clinton, Niagara, and Salina. Part. syn. Surgent and Scalent of Pennsylvania.

- Formation No. 6**, Rogers. Rept. for 1837 and Geol. of Virginias, p. 178. 1884.  
1837.  
Silurian. Virginia. Exact syn. Lower Helderberg pre-Meridian of Pennsylvania.
- Formation No. 7**, Rogers. Rept. for 1837 and Geol. of Virginias, p. 179. 1884.  
Silurian. Virginia. Exact syns. Oriskany, Meridian of Pennsylvania.
- Formation No. 8**, Rogers. Rept. for 1837 and Geol. of Virginias, p. 179. 1884.  
1837.  
Devonian. Virginia. Includes Marcellus, Hamilton, Genesee, Portage, and Chemung. Part. syns. Cadent and Vergent of Pennsylvania.
- Formation No. 9**, Rogers. Rept. for 1837 and Geol. of Virginias, p. 182. 1884.  
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- Formation No. 10**, Rogers. Repts. for 1837 and 1839 and Geol. of Virginias, pp. 183, 335. 1884.  
Carboniferous. Virginia. Included in Lower Carboniferous. Exact syn. Vespertine sandstone of Pennsylvania.
- Formation No. 11**, Rogers. Repts. for 1837, 1838, and 1839 and Geol. of Virginias, pp. 183, 201, 336. 1884.  
Carboniferous. Virginia. Exact syns. Greenbrier shales and limestone, Umbral shales and limestone of Pennsylvania.
- Formation No. 12**, Rogers. Repts. for 1838, 1839, and 1840 and Geol. of Virginias, pp. 201, 340, 487. 1884.  
Carboniferous. Virginia. Exact syn. Great conglomerate. Part. syn. Seral of Pennsylvania.
- Formation No. 13**, Rogers. Repts. for 1838, 1839, 1840 and Geol. of Virginias, pp. 202, 342, 487, 506. 1884.  
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New Jersey.
- Formation ii**, Rogers. N. J. Geol. Surv., Final Rept., pp. 47-90. 1840.  
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- Formation iii**, Rogers. N. J. Geol. Surv., Final Rept., p. 93. 1840.  
New Jersey.
- Formation iv**, Rogers. N. J. Geol. Surv., Final Rept., p. 99. 1840.  
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- Formation v**, Rogers. N. J. Geol. Surv., Final Rept., p. 103. 1840.  
New Jersey.
- Formation No. 14**, Rogers. Rept. for 1840 and Geol. of Virginias, pp. 491, 510. 1884.  
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- Formation No. 15**, Rogers. Rept. for 1840 and Geol. of Virginias, pp. 498, 513. 1884.  
Carboniferous. Virginia. Exact syn. Upper Coal group. Part. syn. Seral of Pennsylvania.
- Formation No. 5**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 32. 1860.  
Maryland.
- Formations Nos. 6 and 7**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 33. 1860.  
Maryland.
- Formation No. 8**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 34. 1860.  
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- Formation No. 10**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 35. 1860.  
Silurian. Maryland. Exact syns. Auroral series, Pennsylvania; Chazy and Black River of New York.

- Formation No. 11**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 35. 1860.  
Maryland.
- Formation No. 12**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 36. 1860.  
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- Formation No. 13**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 36. 1860.  
Silurian. Maryland. Exact syns. Levant series of Pennsylvania; Onedia conglomerate and Medina sandstone of New York.
- Formation No. 14a**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 37. 1860.  
Silurian. Maryland. Exact syns. Surgent series of Pennsylvania, Clinton group of New York.
- Formation No. 14b**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 37. 1860.  
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- Formation No. 15b**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 38. 1860.  
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- Formation No. 16b**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 39. 1860.  
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- Formation No. 18b**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 40. 1860.  
Carboniferous. Maryland. Exact syn. Unbral series of Pennsylvania.
- Formation No. 19**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 40. 1860.  
Carboniferous. Maryland. Exact syn. Seral series of Pennsylvania.
- Formation No. 20**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 41. 1860.  
Juratrias. Maryland.
- Formation Nos. 21 and 22**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 41. 1860.  
Cretaceous. Maryland.
- Formation No. 23**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 43. 1860.  
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- Formation No. 24**, Tyson. Md. State Agric. Chemist, 1st Rept., p. 44. 1860.  
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- Fredericksburg division**, Taff. Texas Geol. Surv., 2d Ann. Rept., p. 717. 1891.  
Cretaceous. Texas. Included in Lower Cretaceous. Includes Texana bed. Caprotina limestone.
- Fredericksburg division**, Hill. Geol. Soc. Am., Bull., vol. ii, pp. 503, 504, 509. 1891.  
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- Freeport limestone**, Platt. 2d Pa. Geol. Surv., Rept. H,<sup>4</sup> p. 308. 1878.  
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- Freeport group**, Lesley. 2d Pa. Geol. Surv., Rept. Q, p. xvi. 1878.  
Carboniferous. Pennsylvania.
- Freeport**, Platt. 2d Pa. Geol. Surv., Rept. H<sup>5</sup>, p. 315. 1880.  
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- Freeport sandstone**, Orton. Ohio Geol. Surv., vol. v, pp. 21, 22. 1884.  
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- Freeport**, White. 2d Pa. Geol. Surv., Rept. T<sup>3</sup>, pp. 53-54. 1885.  
Carboniferous. Pennsylvania.
- Freeport**, Ashburner. 2d Pa. Geol. Surv., Rept. R<sup>2</sup>, p. 384. 1885.  
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- Freeport coal**, White. U. S. Geol. Surv., Bull., No. 65, p. 147. 1891.  
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Lower Silurian, Minnesota.
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- Galena limestone, Shaw. Ill. Geol. Surv., vol. v, pp. 17-21, 36-38, 66-69, 76-77, 86-88, 99-100, 111-113, 129-131, 154-155. 1873.  
Silurian. Illinois. Included in Trenton.
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 Devonian. New York.
- Gardeau, Hall.** Am. Jour. Sci., 1st ser., vol. xlii, p. 55. 1842.  
 Ohio.
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- Garland conglomerate, Carll.** 2d Pa. Geol. Surv., Rept. I<sup>3</sup>, pp. 12-57. 1880.  
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160, 166. 1896.  
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Missouri.
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stone, Moreau sandstone, Osage limestone, Cole Camp sandstone, and Procto-  
limestone.
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- Gaspe sandstones, Logan. Can. Geol. Surv., Repts., 1843-1864, pp. 394-404. 186-  
Devonian. Canada. Included in Gaspé series.
- Gaspe series, Logan. Can. Geol. Surv., Repts., 1843-1863, pp. 406-453, 880-886. 186-  
Canada. Included in Middle and Upper Silurian and Devonian, and Lower Ca-  
boniferous. Includes Gaspé limestone, and Gaspé sandstone, Bonaventure  
formation.
- Gaspe sandstone, Billings. Can. Geol. Surv., Pal. fossils, vol. ii, pt. i, pp. 1-7. 187-  
Devonian. Nova Scotia.
- Gaspe series, Ells. Can. Geol. Surv., Repts., 1880-1881-1882, p. 3DD. 1883.  
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California.



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Devonian. Pennsylvania. Included in No. viii. Exact syn. Upper Hamilton.
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- ennessee, Williams. U. S. Geol. Surv., Bull., No. 41, p. 31. 1887.  
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- ennessee slate, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 1323-1335. 1892.  
Devonian. Pennsylvania. Exact syn. No. viii.
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Exact syns. Tully and Hamilton.
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Indiana.
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Carboniferous. Arkansas. Included in Lower Carboniferous or Mississippian series. Part syns. St. Louis and Warsaw.
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Carboniferous. Missouri. Included in Mississippian series. Includes Chester, St. Louis, and Warsaw.
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Pleistocene. Utah. Included in Quaternary.



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Cambria. Vermont. Exact syns. Argillaceous slate of Dewey, Black and Taconic slate of Emmons, Hudson River or Lorraine of Hall, Primordial of Barrand and Logan.

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Cambrian.

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**Geuda** Salt Measures, Cragin. Colo. College Stud., vol. vi, pp. 3, 9-16. 1896.

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Pleistocene. Arizona.

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Siluro-Devonian. Virginia and West Virginia.

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Cretaceous. Texas. Included in Trinity division of Comanche series.

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Carboniferous. Pennsylvania. Included in Greene County group of Upper Barren Measures.
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Carboniferous. Pennsylvania and West Virginia. Included in Perno-Carboniferous, Dunkard Creek.
- irard shale**, White. 2d Pa. Geol. Surv., Rept. Q<sup>1</sup>, pp. 118-119. 1881.  
Devonian. Pennsylvania.
- irard shale**, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 1367-1370. 1892.  
Devonian. Pennsylvania. Included in No. viii or Portage.
- irardeau limestone**, Keyes. Mo. Geol. Surv., vol. iv, pp. 30, 40. 1894.  
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- irardeau limestone**, Wheeler. Mo. Geol. Surv., vol. xi, p. 41. 1896.  
Ordovician. Missouri.
- lacian**, Whitney and Wadsworth. Harvard Coll. Mus. Comp. Zool. Bull., vol. vii, 1880-84, p. 562. 1884. Included in Azoic system.
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- lade limestone**, Wetherby. Cin. Soc. Nat. Hist., Jour., vol. iii, no. ii, p. 147. 1880.  
Trenton. Kentucky.
- ladeville sandstone**, Campbell. U. S. Geol. Surv., Bull. No. 111, p. 33. 1893.  
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- Knox group**, Hopkins. Ark. Geol. Surv., 1890, vol. iv, p. 50. 1890.  
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- Knox dolomite**, Spencer. Ga. Geol. Surv., 1st Rept. of Prog., pp. 108-189. 1891.  
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- Knox shales series**, Spencer. Ga. Geol. Surv., 1st Rept. of Prog., pp. 101, 106-107. 1891.  
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- Knox sandstone series**, Spencer. Ga. Geol. Surv., 1st Rept. of Prog., 1890-91, p. 101. 1891.  
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- Knox dolomite series**, Spencer. Ga. Geol. Surv., 1st Rept. of Prog., pp. 108-109. 1891.  
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 Cambrian. Appalachian region.
- Knox dolomite**, Hayes. Ala. Geol. Surv., Bull. No. 4, p. 41. 1892.  
 Silurian. Alabama.
- Knox dolomite**, Spencer. Ga. Geol. Surv., The Paleozoic group, pp. 42, 78, 92, 102, 109, 112, 116, 119, 123, 130, 152. 1893.  
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Silurian. Alabama.

Knox dolomite, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 44. 1897.  
Cambro-Silurian. Virginia and West Virginia.

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Tertiary. Texas. Included in Pliocene.

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Tertiary. Idaho.

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Tertiary. Colorado, Wyoming.

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Tertiary. Wyoming. Included in Post-Cretaceous.

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Tertiary.

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Cretaceous. Interior region.
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- Laramie formation, Hills. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 58. 1899.  
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- New Milford shale, White. 2d Pa. Geol. Surv., Rept. G<sup>6</sup>, pp. 101-102. 1882.  
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- New Milford shale, Prosser. U. S. Geol. Surv., Bull. No. 120, p. 78. 1894.  
Devonian. New York and Pennsylvania. Included in Chemung (Upper Devonian).
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- New Red sandstone, Frazer. Am. Inst. Mg. Engrs., Trans., vol. v, p. 494. 18  
Juratrias.
- New Red, Frazer. 2d Pa. Geol. Surv., Rept. C<sup>3</sup>, pp. 13-16. 1880.  
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- New Red, Lyman. Am. Phil. Soc., Proc., vol. xxxiii, p. 192. 1894.  
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1895.
- Juratrias. Pennsylvania, New Jersey. Includes Pottstown, Perkasio, Lansce,  
Gwynedd, and Norristown shales. Exact syn. Newark.
- New Red, Hopkins. Pa. State Coll. Ann. Rept. for 1896, Appendix, p. 45, et 19.  
1897.
- Juratrias. Pennsylvania.
- New Richmond** sandstone, Winchell. Minn. Geol. and Nat. Hist. Surv., Final  
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Cambrian. Included in Lower Magnesian.
- New Richmond sandstone, Keyes. Iowa Geol. Surv., 1st Ann. Rept., vol. i, p. 13.  
1893.
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167, 179. 1895.
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- New River system, Platt. 2d Pa. Geol. Surv., Rept. 4<sup>2</sup>, pp. xxiv-xxvi. 1877.
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conglomerate series. Includes Sharon coal, Fire Creek and Quinmemont beds.
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Paleozoic. New York. Includes all subdivisions from Potsdam to Catskill  
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Silurian. New York. Includes Champlain, Ontario, Helderberg, and Erie divisions.

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Juratrias. New Jersey.

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Triassic. Maryland.

Newark system, Kummel. N. J. Geol. Surv., Rept., 1897, pp. 23-159. 1898.

Juratrias. New Jersey. Includes Stockton, Lockatong, and Brunswick series.

Newark, Clark. Md. Geol. Surv., vol. ii, p. 170. 1898.

Triassic. Maryland.

Newark, Kummel. Jour. of Geol., vol. vii, pp. 23-52. 1899.

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- Newman** limestone, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 1898.  
Carboniferous. Kentucky.
- Newman** limestone, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 1899.  
Carboniferous. Tennessee. Included in Mississippian series.
- Newman** limestone, U. S. Geol. Surv., Geol. Atlas of U. S. Folio No. 59. 1899.  
Carboniferous. Virginia and Tennessee.
- Newport** conglomerate, Rogers. Boston Soc. Nat. Hist., Proc., vol. xviii, 1875—p. 97. 1875.
- Newport** limestone, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, p. 1594. 1891.  
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- Newport Neck** shales, Shaler, Woodworth and Foerste. U. S. Geol. Surv., Mon. vol. xxxiii, p. 383. 1899.  
Cambrian (?). Rhode Island.
- Newtonville** limestone, Andrews. Ohio Geol. Surv., Rept. Prog. 1869, p. 93. 1871.  
Ohio. Exact syn. Maxville limestone.
- Newtonville** limestone, Andrews. Ohio Geol. Surv., Rept. Prog., 1869, p. 96. 1871.  
Ohio. Exact syn. Maxville limestone.
- Newtonville** limestone, Andrews. Ohio Geol. Surv., vol. i, pt. i, p. 314. 1873.  
Carboniferous. Ohio. Included in Coal Measures. Exact syn. Maxville limestone.
- Newtonville** limestone, Orton. Ohio Geol. Surv., vol. vi, pp. 3, 43. 1888.  
Carboniferous. Ohio. Exact syn. Maxville limestone and Subcarboniferous limestone.
- Niagara** limestone, Hall. Am. Jour. Sci., 1st ser., vol. xlii, p. 58. 1842.
- Niagara** shale, Conrad. Phil. Acad. Nat. Sci., Jour., vol. viii, p. 232. 1842.  
Middle Silurian.
- Niagara** sandstone, Conrad. Phil. Acad. Nat. Sci., Jour., vol. viii, p. 230. 1842.  
Lower Silurian.
- Niagara** group, Vanuxem. Geol. of N. Y., pt. iii, pp. 90–94. 1842.  
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Upper part Proteau group, Geodiferous limerock, and Calciferous slate.
- Niagara** limestone, Rogers. Am. Phil. Soc., Trans., new ser., vol. viii, p. 274. 1842.  
Silurian. Canada and New York.

- Niagara group, Hall. Geol. of N. Y., pt. iv, 4th Geol. Dist., pp. 18, 80-117. 1843.  
Paleozoic. New York. Included in New York system. Includes Geodiferous  
limerock and Calciferous slate, Lockport limestone, Rochester shale, Niagara  
shale, and Niagara limestone. Part. syn. Proteau group, No. 6 of Pennsylvania  
Survey.
- Niagara shale, Hall. Geol. of N. Y., pt. iv, 4th Geol. Dist., pp. 81-83. 1843.  
Paleozoic. New York. Included in Niagara group.
- Niagara limestone, Hall. Geol. of N. Y. pt. iv, 4th Geol. Dist., pp. 84-97. 1843.  
Paleozoic. New York. Included in Niagara group.
- Niagara group, Eumons. Agric. of N. Y., vol. i, pp. 150-152. 1846.  
New York. Included in Ontario division of New York system. Includes Niagara  
shale and Niagara limestone. Exact syn. Geodiferous limerock and Calciferous  
slate, Lockport limestone and Rochester slate. Part. syn. Proteau group of  
Ann. Repts. of New York.
- Niagara limestone, Eumons. Agric. of New York, vol. i, pp. 151-152. 1846.  
New York. Included in Niagara group of Ontario division of New York system.
- Niagara group, Loomis. Am. Jour. Sci., 2d ser., vol. i, p. 222. 1846.  
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- Niagara limestone, Murray. Can. Geol. Surv., Rept., 1847-1848. 1849.  
Silurian. Ontario.
- Niagara group, Hale. Foster and Whitney's Rept. on Geol. of Lake Superior dis-  
trict, pt. ii, p. 156. 1851.  
Silurian. Lake Superior region.
- Niagara group, Hall. Pal. of New York, vol. ii, pp. 2-4, 106-108. 1852.  
Silurian. New York.
- Niagara group, Hall. Am. Jour. Sci., 2d ser., vol. xvii, p. 192. 1854.  
Silurian. Michigan.
- Niagara limestone, Hall. Iowa Geol. Surv., vol. i, p. 71. 1858.  
Silurian. Iowa.
- Niagara limestone, Whitney. Iowa Geol. Surv., vol. i, pt. i, pp. 292-295, 362-368.  
1858.  
Silurian. Iowa.
- Niagara, Safford. Am. Jour. Sci., 2d ser., vol. xxxi, p. 207. 1861.  
Silurian. Tennessee. Includes Variegated limestone, and glade-forming lime-  
stones and shales, or Gray limestones and shales.
- Niagara limestone, Whitney. Rept. on Upper Mississippi lead region, p. 186.  
1862.  
Silurian. Wisconsin.
- Niagara formation, Logan. Can. Geol. Surv., Rept. 1843-63, pp. 321-336. 1863.  
Middle Silurian. Canada. Included in Anticosti group.
- Niagara group, Chapman. Can. Inst., new ser., vol. viii, pp. 208-216. 1863.  
Silurian. Canada. Included in Middle Silurian. Includes Medina and Clinton,  
Niagara and Guelph formations. Part. syn. Anticosti group (+ Guelph).
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Silurian. Illinois.
- Niagara formation, Bell. Can. Geol. Surv., Rept. 1863-66, pp. 174, 176. 1866.  
Middle Silurian. Canada.
- Niagara formation, Bell. Rept. 1866-69, pp. 128-131. 1866, 1871.  
Silurian. Canada.
- Niagara limestone, Whitney. Ill. Geol. Surv., vol. i, pp. 177-186. 1866.  
Silurian. Illinois. Exact syns. Upper Magnesian, Corraline and Pentamerus  
beds, and Mound limestone. Part. syn. Cliff limestone.

- Niagara group, Bannister. Ill. Geol. Surv., vol. iii, pp. 245-253. 1868.  
Silurian. Illinois.
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Silurian. Illinois.
- Niagara group, Safford. Geol. of Tennessee, by Safford, pp. 291-322. 1869.  
Silurian. Tennessee. Includes Meniscus limestone, Dyestone group, White Oak Mount sandstone, and Clinch Mount sandstone. Exact syn. Dana's Niagara period. Part. syns. Medina, Clinton, and Niagara epochs.
- Niagara group, Bannister. Ill. Geol. Surv., vol. iv, pp. 114, 131, 139. 1870.  
Silurian. Illinois.
- Niagara limestone, Bradley. Ill. Geol. Surv., vol. iv, pp. 213, 232. 1870.  
Silurian. Illinois.
- Niagara limestone, Worthen. Ill. Geol. Surv., vol. iv, p. 6. 1870.  
Silurian. Illinois.
- Niagara, Worthen. Am. Assoc. Adv. Sci., Proc., vol. xix, p. 172. 1870.  
Silurian. Illinois.
- Niagara group, White. Iowa Geol. Surv., vol. i, pp. 182-184. 1870.  
Silurian. Iowa. Includes Niagara limestone. Part. syn. Le Claire limestone.
- Niagara limestone, Hunt. Am. Jour. Sci., 3d ser., vol. i, pp. 420-424. 1871.  
Silurian. Illinois.
- Niagara, Hall. Am. Assoc. Adv. Sci., Proc., vol. xxii, p. 321. 1873.  
Silurian. New York, Mississippi Valley. Exact syn. Coralline limestone.
- Niagara, Newberry. Ohio Geol. Surv., vol. i, pt. i, pp. 62, 104, 128. 1873.  
Silurian. Ohio.
- Niagara, Orton. Ohio Geol. Surv., vol. i, pt. i, p. 464. 1873.  
Silurian. Ohio.
- Niagara, Winchell. Ohio Geol. Surv., vol. i, pt. i, pp. 596, 613, 627, 741. 1873.  
Silurian. Ohio.
- Niagara, Shumard. Mo. Geol. Surv., Rept., 1855-1871, pp. 261, 281, 296. 1873.  
Silurian. Missouri. Included in Upper Silurian.
- Niagara limestone, Worthen. Ill. Geol. Surv., vol. v, p. 223. 1873.  
Silurian. Illinois.
- Niagara limestone, Shaw. Ill. Geol. Surv., vol. v, pp. 15-16, 33-35, 64-65, 78-79, 132-134, 149-152, 187. 1873.  
Silurian. Illinois.
- Niagara, Orton. Ohio Geol. Surv., vol. ii, p. 667. 1874.  
Silurian. Ohio. Included in Upper Silurian. Includes Guelph or Cedarville beds, Springfield beds, West Union beds, Niagara beds, Niagara shale, and Dayton stone.
- Niagara, Winchell. Ohio Geol. Surv., vol. ii, pp. 229, 316, 354, 359, 370, 398. 1874.  
Silurian. Ohio.
- Niagara limestone, Killebrew and Safford. Resources of Tenn., pp. 38-39. 1874.  
Silurian. Tennessee. Included in Niagara period.
- Niagara, Hall. Regents Univ. of N. Y., 27th Ann. Rept., pp. 117-131. 1875.  
Silurian. New York. Includes Coralline limestone of New York.
- Niagara limestone, Winchell. Minn. Geol. and Nat. Hist. Surv., 4th Ann. Rept., p. 53. 1876.  
Lower Silurian. Minnesota.
- Niagara, Smith. Ala. Geol. Surv., Rept., 1875, pp. 26, 99. 1876.  
Silurian. Alabama. Included in Upper Silurian.
- Niagara, Hotchkiss. A Geographical and Political Summary of Virginia, p. 22. 1876.  
Upper Silurian. Virginia. Exact syns. Surgent, Levant (Formation iv, Rogers).
- Niagara, Ashburner. Am. Phil. Soc. Proc., vol. xvi, p. 556. 1877.  
Silurian. Pennsylvania.

- Niagara limestone, Chamberlin. Geol. of Wis., vol. ii, pp. 335-371. 1877.  
Upper Silurian. Wisconsin.
- Niagara group, Shaler. Ky. Geol. Surv., vol. iii, new ser., pp. 35, 163-169. 1877.  
Silurian. Kentucky. Exact syn. includes all New York formations from top of Medina sandstone to top of Niagara period.
- Niagara, Newberry. Ohio Geol. Surv., vol. iii, p. 7. 1878.  
Silurian. Ohio. Included in Upper Silurian.
- Niagara, Hussey. Ohio Geol. Surv., vol. iii, pp. 443, 447. 1878.  
Silurian. Ohio.
- Niagara, Orton. Ohio Geol. Surv., vol. iii, pp. 386, 408. 1878.  
Silurian. Ohio.
- Niagara, St. John. U. S. Geol. and Geog. Surv. of Terr., 11th Ann. Rept., p. 484. 1879.  
Silurian. Idaho.
- Niagara group, Miller. Cin. Soc. Nat. Hist., Jour., vol. iv, no. iv, pp. 268, 290. 1881.  
Silurian.
- Niagara, Chamberlin. Geol. of Wis., vol. i, pp. 178, 181-196. 1883.  
Upper Silurian. Wisconsin. Includes Mayville beds, Waukesha beds, Racine beds, Byron beds, Lower and Upper Coral beds, and Guelph beds.
- Niagara, Hall. Ann. Assoc. Adv. Sci., Proc., vol. xxxi, p. 46. 1883.  
Silurian. Eastern U. S., Mississippi Valley.
- Niagara limestone, Winchell. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. i, p. 302. 1884.  
Minnesota.
- Niagara group, Linney. Ky. Geol. Surv. (Proctor), Geol. of Clark and Montgomery Cos. 1884.  
Silurian. Kentucky. Included in Upper Silurian.
- Niagara, Linney. Ky. Geol. Surv., Geol. of Spencer and Nelson Cos., pp. 36-45. 1884.  
Silurian. Kentucky.
- Niagara, Knott. Ky. Geol. Surv., Geol. of Marion Co., p. 15. 1885.  
Silurian. Kentucky.
- Niagara, Linney. Ky. Geol. Surv., Geol. of Bath Co., p. 21. 1886.  
Silurian. Kentucky.
- Niagara, Ringneberg. Ann. Geol., vol. i, pp. 264-272. 1888.  
Silurian. New York.
- Niagara group, Miller. N. A. Geol. and Pal., p. 50. 1889.
- Niagara group, Orton. U. S. Geol. Surv., 8th Ann. Rept., pt. ii, p. 561. 1889.  
Silurian. Ohio, Indiana.
- Niagara group, Orton. Ohio Geol. Surv., 3d Organization, 1st Ann. Rept., pp. 18-20. 1890.  
Silurian. Ohio. Includes Niagara limestone and shale, Guelph limestone and Hillsboro sandstone. Part. syn. Guelph limestone.
- Niagara limestone, Hopkins. Ark. Geol. Surv., 1890, vol. iv, pp. 51, 60, 81, 213.  
Silurian. Arkansas. Includes Meniscus (Tenn.), Galt or Guelph (Canada), and Leclaire (Iowa) limestone, and Athens (Ill.) marble. Part. syn. Cliff limestone (Ohio).
- Niagara, Phinney. U. S. Geol. Surv., 11th Ann. Rept., pt. i, p. 632. 1891.  
Silurian. Indiana.
- Niagara limestone, McGee. U. S. Geol. Surv., 11th Ann. Rept., pt. i, p. 323. 1891.  
Silurian. Iowa.
- Niagara, Prosser. Roch. Acad. Sci., Proc., vol. ii, pp. 50-124. 1892.  
Silurian. New York.



- Niagara limestone, Keyes. Iowa Geol. Surv., 1st Ann. Rept., vol. i, p. 30. 1893.  
Silurian. Iowa. Included in Upper Silurian.
- Niagara, Houser. Iowa Geol. Surv., 1st Ann. Rept., vol. i, pp. 199-207. 1893.  
Silurian. Iowa.
- Niagara, Brumell. Geol. Soc. Am., Bull., vol. iv, pp. 227, 231. 1893.  
Silurian. Ontario.
- Niagara, Prosser. Geol. Soc. Am., Bull., vol. iv, pp. 100, 108. 1893.  
Silurian. New York.
- Niagara, Darton. N. Y. State Geol., 13th Ann. Rept., pp. 206-207, 218. 1894.  
Silurian. New York.
- Niagara limestone, Udden. U. S. Geol. Surv., 17th Ann. Rept., pt. ii, p. 834. 1896.  
Silurian. Illinois.
- Niagara series, Calvin. Iowa Geol. Surv., vol. v, pp. 48-60. 1896.  
Silurian. Iowa. Includes Delaware, Leclaire, Anamosa, and Bertram stages.
- Niagara limestone, Luther. N. Y. State Geol., 15th Ann. Rept., pp. 247-250. 1897.  
Silurian. New York.
- Niagara formation, Buckley. Wis. Geol. and Nat. Hist. Surv., Bull. No. 4, Econ. ser., No. 2, pp. 298-348. 1898.  
Wisconsin.
- Niagara limestone, Calvin. Iowa Geol. Surv., vol. viii, pp. 144-159, 216-220. 1898.  
Silurian. Iowa. Includes Delaware stage.
- Niagara, Barlow. Can. Geol. Surv., Rept. new ser., vol. x, p. 1231. 1898.  
Silurian. Ontario and Quebec.
- Niagara group, Luther. N. Y. State Geol., 16th Ann. Rept., p. 204. 1899.  
Silurian. New York.
- Niagaran, Clarke and Schuchert. Science, new ser., vol. x, pp. 876-877. 1899.  
Silurian. New York. Includes Clinton beds, Rochester shale, Lockport limestones, and Guelph dolomite.
- Niagara, Clark. Md. Geol. Surv., vol. iii, p. 97. 1899.  
Silurian. Maryland. Included in Silurian. Exact syn. Lewiston (Helderberg).
- Niagara limestone, Calvin and Bain. Iowa Geol. Surv., vol. x, p. 445. 1900.  
Silurian. Iowa.
- Niagara formation, O'Harra. Md. Geol. Surv., Allegany County, p. 91. 1900.  
Silurian. Maryland.
- Nichols** shale, Hayes. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 20. 1895.  
Cambrian. Tennessee. Included in Chilhowee series.
- Nichols shale, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folios 16, 25. 1895, 1896.  
Cambrian. Tennessee and North Carolina.
- Nicola** series, Dawson. Can. Geol. Surv., Rept., 1877-78, pp. 74B-81B, 171B. 1879.  
Triassic(?). British Columbia. Red Beds (E. of Wahsatch) and Star Peak group (W. of Wahsatch) of 40th Par. Survey.
- Nicola, Dawson. Can. Geol. Surv., new ser., vol. vii, pp. 26B, 49B-58B, 112B-114B, 130B-146B. 1896.  
Juratrias. British Columbia.
- Nicollet** clay, Harris. Phil. Acad. Nat. Sci., Proc., vol. ii, pp. 235-237. 1846.  
Cretaceous.
- Nilkoka** beds, Brooks. U. S. Geol. Surv., 20th Ann. Rept., pt. vii, pp. 472, 480. 1900.  
Alaska.
- Nineveh** limestone, White. U. S. Geol. Surv., Bull. No. 65, p. 32. 1891.  
Carboniferous. Pennsylvania, West Virginia. Included in Permo-Carboniferous, Dunkard Creek. Exact syn. Limestone No. 10.

**Niobrara** division, Meek and Hayden. Phil. Acad. Nat. Sci., Proc., vol. xiii, pp. 419, 422. 1862.

Lower Cretaceous. Nebraska. Exact syn. Formation No. iii.

**Niobrara**, Hayden. Am. Phil. Soc., Trans., new ser., vol. xii, p. 1, et seq. 1863.  
Cretaceous. Northwest.

**Niobrara**, Hayden. U. S. Geol. Surv. of Wyoming, pp. 87, 90. 1871.

Cretaceous. Included in Lower Cretaceous. Exact syn. Formation No. 3.

**Niobrara**, Hayden. U. S. Geol. Surv. of Terr., 1-3d Ann. Repts., pp. 49, 54. 1873.  
Cretaceous. Exact syn. Formation No. 3.

**Niobrara**, Cope. U. S. Geol. and Geog. Surv., Mon., vol. ii, pp. 16-24. 1875.  
Cretaceous.

**Niobrara**, Mudge. U. S. Geol. and Geog. Surv. of Terr., Bull., vol. ii, p. 214. 1876.  
Cretaceous. Kansas.

**Niobrara** group, Meek. U. S. Geol. and Geog. Surv. of Terr., Mon., vol. ix, pp. xxx-xxxiii. 1876.

Cretaceous.

**Niobrara**, Mudge. U. S. Geol. and Geog. Surv. of Terr., 9th Ann. Rept., p. 281. 1877.

Cretaceous. Kansas. Includes Niobrara and Fort Hays.

**Niobrara**, Hague. U. S. Geol. Expl. of 40th Parallel, vol. ii, pp. 42, 67-71. 1877.  
Tertiary. Wyoming. Included in Pliocene.

**Niobrara**, King. U. S. Geol. Expl. of 40th Parallel, vol. i, p. 425. 1878.  
Tertiary. Colorado, Wyoming. Included in Pliocene.

**Niobrara** group, Newton. Geol. of Black Hills., pp. 173-174. 1880.  
Cretaceous. South Dakota.

**Niobrara**, Stevenson. U. S. Geog. and Geol. Surv. W. of 100th M., vol. iii, Suppl., p. 97. 1881.

Cretaceous. Colorado, New Mexico. Included in Colorado. Exact syn. Cretaceous, No. 3.

**Niobrara** group, Sternberg. Kansas City Review, vol. v, pp. 1-4. 1881.  
Cretaceous. Kansas.

**Niobrara**, Dawson. Science, vol. i, p. 429. 1883.  
Cretaceous. Canada.

**Niobrara**, Stevenson. Am. Geol., vol. iii, p. 393. 1889.  
Cretaceous. Colorado and New Mexico.

**Niobrara**, Williston. Kansas Acad. Sci., Trans., vol. xiii, pp. 107-111. 1893.  
Upper Cretaceous. Kansas.

**Niobrara** group, Calvin. Iowa Geol. Surv., vol. i, pp. 149-161. 1893.  
Cretaceous. Iowa. Exact syn. Inoceramus beds.

**Niobrara** limestone, Eldridge. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 9. 1894.

Cretaceous. Colorado.

**Niobrara** chalk, Calvin. Am. Geol., vol. xiv, p. 142. 1894.

Cretaceous. Nebraska and Dakota. Included in Upper Cretaceous.

**Niobrara** chalk, Calvin. Am. Assoc. Adv. Sci., Proc., vol. xliii, p. 197. 1894.  
Cretaceous. Nebraska and Iowa.

**Niobrara**, Bain. Iowa Geol. Surv., vol. iii, pp. 101-114. 1895.  
Cretaceous. Iowa.

**Niobrara**, Emmons, Cross and Eldridge. U. S. Geol. Surv., Mon., vol. xxvii, p. 66. 1896.

Cretaceous. Colorado. Included in Colorado group.

**Niobrara** group, Gilbert. U. S. Geol. Surv., 17th Ann. Rept., pt. ii, p. 566. 1896.  
Cretaceous. Colorado. Includes Timpas formation and Apishapa formation.

- Niobrara, Williston. Kansas Univ. Geol. Surv., vol. ii, pp. 235-246. 1897.  
Upper Cretaceous. Kansas.
- Niobrara group, Logan. Kansas Univ. Geol. Surv., vol. ii, pp. 219-221. 1897.  
Upper Cretaceous. Kansas. Includes Fort Hays limestone, and Pteranodon beds in Smoky Hill chalk.
- Niobrara formation, Gilbert. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 36. 1897.  
Cretaceous. Colorado.
- Niobrara, Adams. Kan. Univ. Geol. Surv., vol. iv, pp. 24-27. 1898.  
Upper Cretaceous. Kansas. Includes Pteranodon beds (Herperornis and Rudistes beds) and Fort Hays beds.
- Niobrara formation, Hills. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 58. 1899.  
Cretaceous. Colorado. Apishapa and Timpas formations.
- Niobrara, Logan. Jour. of Geol., vol. vii, pp. 89-91. 1899.  
Cretaceous. Kansas, Nebraska. Includes Fort Hays limestone, Pteranodon beds.
- Nipigon** group, Spencer. Can. Nat., 2d ser., vol. viii, pp. 55-70. 1878.  
Canada. Exact syn. Copper-bearing series.
- Nipigon series, Bell. Can. Geol. Surv., Rept. 1876-77, pp. 213-215. 1878.  
Canada. Exact syn. Upper Copper-bearing series.
- Nipigon group, Selwyn. Can. Geol. Surv., Rept. 1877-78, p. 15A. 1879.  
Canada.
- Nipigon, Walcott. Geol. Soc. Am., Bull., vol. x, p. 222. 1899.  
Algonkian. Ontario. Part. syn. Keweenawan of Michigan.
- Nisconlith** series, Dawson. Can. Geol. Surv., new ser., vol. iv, pp. 31B-32B. 1890.  
Paleozoic. British Columbia.
- Nisconlith series, Dawson. Geol. Soc. Am., Bull., vol. ii, pp. 165, 170. 1891.  
Cambrian. British Columbia.
- Nisconlith series, Dawson. Can. Geol. Surv., new ser., vol. vii, pp. 26B, 30B-32B. 1896.  
Cambrian. British Columbia.
- Nisconlith slate, McConnell. Can. Geol. Surv., new ser., vol. x, p. 30A. 1898.  
British Columbia.
- Nishnabotany** sandstone, White. Iowa Geol. Surv., vol. i, pp. 289-291. 1870.  
Cretaceous. Iowa.
- Nishnabotany sandstone, Winchell. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. i, p. 308. 1884.  
Minnesota.
- Nishnabotany sandstone, Keyes. Iowa Geol. Surv., vol. i, pp. 134-135. 1893.  
Cretaceous. Iowa.
- Nishnabotany sandstone, Lonsdale. Iowa Geol. Surv., vol. iv, pp. 412-423. 1895.  
Cretaceous. Iowa.
- Nishnabotany sandstone, White. Am. Jour. Sci., 2d ser., vol. xlv, pp. 27, 119. 1898.  
Cretaceous. Iowa. Exact syn. Dakota (?).
- Nodaway** limestone, Gallagher. Mo. Geol. Surv., Bien. Rept., p. 53. 1898.  
Upper Carboniferous. Missouri. Included in Upper Coal Measures.
- Nogales** division, Dumble. Am. Inst. Mg. Engrs., Trans., vol. xxix, p. 128. 1900.  
Tertiary. Mexico.
- Noix** oölite, Keyes. Iowa Acad. Sci., Proc., vol. v, p. 62. 1898.  
Silurian. Iowa.
- Nolichucky** shale, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 12. 1894.  
Cambrian. Kentucky, Virginia, and Tennessee.

- Solichucky shale, Walcott. Geol. Soc. Am., Bull., vol. v, p. 195. 1894.  
Cambrian. Virginia.
- Solichucky shale, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 16, 25, 27. 1895, 1896.  
Cambrian. Tennessee and North Carolina.
- Solichucky shale, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 33. 1896.  
Cambrian. Tennessee. Included in Conasauga shale.
- Solichucky shale, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 44, 1897.  
Cambrian. Virginia, West Virginia.
- Solichucky shale, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 59, 1899.  
Cambrian. Virginia, Tennessee.
- Norian**, Hitchcock. Am. Assoc. Adv. Sci., Proc., vol. xxi, p. 136. 1872.  
Archean. New Hampshire.
- Norian**, Crosby. Report on Geol. Map of Mass., pp. 7-11. 1876.  
Massachusetts.
- Norian series**, Hunt. 2d Pa. Geol. Surv., Rept. E, pp. 161-164. 1878.  
Archean. Canada.
- Norian series**, Selwyn. Can. Geol. Surv., Rept. 1877-78, pp. 10A, 12A-13A. 1879.  
Canada.
- Norian**, Hunt. Smithsonian Inst. Ann. Rept., 1882, p. 336. 1884.  
Eozoic. N. E. America. Included in Archean. Includes Upper Laurentian or Labradorian.
- Norian**, Whitney and Wadsworth. Harvard Coll. Mus. Comp. Zool., Bull., vol. vii, 1880-84, pp. 561, 562. 1884.  
Azoic.
- Norian**, Pumpelly. Geol. Soc. Am., Bull., vol. iv, p. 383. 1893.  
Archean. Canada (?).
- Normandy** limestone, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S. Folio No. 53. 1899.  
Silurian. Tennessee. Exact syns. Chickamauga limestone, Nashville series.
- Norristown** shale, Lyman. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. ii, pp. 2612-2616. 1895.  
Juratrias, Permian (?). Pennsylvania. Included in New Red.
- Norristown** stage, Stevenson. N. Y. Acad. Sci., Trans., vol. xv, p. 51. 1896.  
Carboniferous. Arkansas, Indian Territory.
- North Denison**, Hill. Geol. Soc. Am., Bull., vol. v, p. 302. 1894.  
Cretaceous. Indian Territory. Included in Denison beds, Washita division.
- North Haven** greenstone, Smith. Geol. of the Fox Islands, pp. 13-17. 1896.  
Pre-Silurian. Maine.
- North Park** group, King. U. S. Geol. Expl. of 40th Parallel, vol. i, p. 431. 1878.  
Tertiary. Wyoming. Included in Pliocene.
- North Valley Hill** sandstone, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. i, p. 166 et seq. 1892.  
Cambrian. Pennsylvania.
- North Vernon** limestone, Borden. Indiana Geol. Surv., 7th Ann. Rept., 1875, pp. 148, 160. 1876.  
Devonian. Indiana.
- North Vernon** bluestone, Cox. Indiana Geol. Surv., 8th, 9th, and 10th Ann. Repts., 1876, 1877, 1878, p. 88. 1879.  
Indiana.
- North Vernon** stone, Elrod. Indiana Dept. Geol. and Nat. Hist., 11th Ann. Rept., 1881, pp. 174, 186. 1882.  
Carboniferous. Indiana.

- Norton** formation, Campbell. U. S. Geol. Surv., Bull. No. 111, p. 34. 1893.  
Carboniferous. Virginia. Included in Coal Measures. Exact syn. Lower Coal Measures.
- Norton**, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 12. 1894.  
Carboniferous. Kentucky, Virginia, Tennessee.
- Norton zone**, Williston. Kan. Univ. Quart., vol. iv., p. 251. 1896.  
Upper Cretaceous. Kansas. Included in Smoky Hill chalk.
- Norton** formation, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 59. 1899.  
Carboniferous. Virginia and Tennessee.
- Novaculite** series, Ashley. Am. Phil. Soc., Proc., vol. xxxvi, pp. 228 et seq. 1897.  
Carboniferous. Arkansas.
- Nulato** sandstone, Spurr. U. S. Geol. Surv., 18th Ann. Rept., pt. iii, p. 196. 1898.  
Tertiary. Alaska. Included in Miocene.
- Nulato** beds, Becker. U. S. Geol. Surv., 18th Ann. Rept., pt. iii, pl. i. 1898.  
Alaska.
- Numbers I, II, III, IV**, Meek and Hayden. Am. Jour. Sci., 2d ser., vol. xxviii, pp. 219-226. 1859.  
Cretaceous. Kansas and Nebraska.
- Number I**, Rogers. Pa. State Geol., 2d Ann. Rept., pp. 20-23. 1838.  
Cambrian. Pennsylvania.
- Number I**, Rogers. Pa. State Geol., 4th Ann. Rept., pp. 38, 46. 1840.  
Cambrian. Pennsylvania.
- Number I**, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. i, pp. 165-186. 1892.  
Cambrian. Pennsylvania. Includes Chiques sandstone, Hellam quartz, North Valley, Hill sandstone, Potsdam, and Upper Cambrian quartzite. Exact syn. Primal sandstone.
- Number II**, Rogers. Pa. State Geol., 2d Ann. Rept., pp. 23-30. 1838.  
Silurian. Pennsylvania.
- Number II**, Rogers. Pa. State Geol., 4th Ann. Rept., pp. 41, 44, 53, 99, 134. 1840.  
Silurian. Pennsylvania.
- Number II**, Prime. 2d Pa. Geol. Surv., Rept. D, pp. 7-15. 1875.  
Silurian. Pennsylvania. Includes Calciferous, Chazy, Birdseye, and Black River of New York.
- Number II**, Prime. 2d Pa. Geol. Surv., Rept. D<sup>2</sup>, pp. 11-22. 1878.  
Silurian. Pennsylvania. Exact syn. Siluro-Cambrian.
- Number II**, Hall. 2d Pa. Geol. Surv., Rept. C<sup>6</sup>, pp. 34-38. 1881.  
Silurian. Pennsylvania.
- Number II**, Prime. 2d Pa. Geol. Surv., Rept. D<sup>3</sup>, pt. i, pp. 161-201. 1883.  
Silurian. Pennsylvania.
- Number II**, D'Inwilliers. 2d Pa. Geol. Surv., Rept. D<sup>3</sup>, pt. ii, pp. 137-196. 1883.  
Silurian. Pennsylvania. Includes Auroral and Matinal of Rogers, Calciferous, Chazy, etc., of New York.
- Number II**, Ewing. 2d Pa. Geol. Surv., Rept. T<sup>4</sup>, pp. 401-424. 1884.  
Silurian. Pennsylvania. Includes Trenton, Chazy, Calciferous, etc. Exact syn. Great Valley limestone.
- Number III**, Rogers. Pa. State Geol., 2d Ann. Rept., pp. 30-36. 1838.  
Silurian. Pennsylvania.
- Number III**, Rogers. Pa. State Geol., 4th Ann. Rept., pp. 64, 101, 104. 1840.  
Silurian. Pennsylvania.
- Number III**, Sanders. 2d Pa. Geol. Surv., Rept. D<sup>3</sup>, pt. i, pp. 83-85. 1883.  
Silurian. Pennsylvania. Exact syn. Hudson River.
- Number III**, Lesley. 2d Pa. Geol. Surv., Rept. D<sup>3</sup>, pt. i, pp. 32-35. 1883.  
Silurian. Pennsylvania. Exact syn. Hudson River.



- Number III, Ewing. 2d Pa. Geol. Surv., Rept. T<sup>1</sup>, pp. 424-427. 1884.  
 Silurian. Pennsylvania. Includes Hudson River and Utica.
- Number III, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. i, pp. 525-624. 1892.  
 Silurian. Pennsylvania. Includes Utica and Hudson River slate.
- Number IV, Rogers.** Pa. State Geol., 2d Ann. Rept., pp. 36-39. 1838.  
 Silurian. Pennsylvania.
- Number IV, Rogers. Pa. State Geol., 3d Ann. Rept., pp. 47-49. 1839.  
 Silurian. Pennsylvania.
- Number IV, Rogers. Pa. State Geol., 4th Ann. Rept., pp. 69, 102, 105, 137. 1840.  
 Silurian. Pennsylvania.
- Number IV, Ewing. 2d Pa. Geol. Surv., Rept. T<sup>1</sup>, pp. 427-429. 1884.  
 Silurian. Pennsylvania. Includes Oneida and Medina.
- Number IV, D'Invilliers. 2d Pa. Geol. Surv., Rept. F<sup>1</sup>, pp. 78-79. 1891.  
 Silurian. Pennsylvania. Includes Medina and Oneida.
- Number IV, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. i, pp. 625-719. 1892.  
 Silurian. Pennsylvania. Includes Oneida and Medina.
- Number V, Rogers.** Pa. State Geol., 2d Ann. Rept., pp. 39-46. 1838.  
 Silurian. Pennsylvania.
- Number V, Rogers. Pa. State Geol., 4th Ann. Rept., pp. 78, 140. 1840.  
 Silurian. Pennsylvania.
- Number V, Ewing. 2d Pa. Geol. Surv., Rept. T<sup>1</sup>, p. 429. 1884.  
 Silurian. Pennsylvania. Exact syn. Clinton group.
- Number V, D'Invilliers. 2d Pa. Geol. Surv., Rept. F<sup>1</sup>, pp. 62-78. 1891.  
 Silurian. Pennsylvania. Includes Salina and Clinton.
- Number V, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 721-897. 1892.  
 Silurian. Pennsylvania. Includes Clinton, Niagara, Salina, Barree group, McCoytown sandstone, Lost Creek limestone, Bloomsburg shale, and Bridgeport sandstone.
- Number VI, Rogers.** Pa. State Geol., 2d Ann. Rept., pp. 46-50. 1838.  
 Silurian. Pennsylvania.
- Number VI, Rogers. Pa. State Geol., 4th Ann. Rept., pp. 84-143. 1840.  
 Silurian. Pennsylvania. Exact syn. Fossiliferous limestone.
- Number VI, Ewing. 2d Pa. Geol. Surv., Rept. T<sup>1</sup>, pp. 429-430. 1885.  
 Silurian. Pennsylvania. Exact syn. Lower Helderberg.
- Number VI, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 898-1033. 1892.  
 Silurian. Pennsylvania. Includes Stormville shale, Bossardville limestone, Poxono Island shale, Bastard limestone, Lewistown limestone, and Clarks Mill shale.  
 Exact syn. Lower Helderberg.
- Number VII, Rogers.** Pa. State Geol., 2d Ann. Rept., pp. 50-52. 1838.  
 Devonian. Pennsylvania.
- Number VII, Rogers. Pa. State Geol., 4th Ann. Rept., pp. 88-143. 1840.  
 Devonian. Pennsylvania. Exact syn. Fossiliferous sandstone.
- Number VII, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 1034-1142. 1892.  
 Devonian. Pennsylvania. Includes Oriskany, Canda-Galli and Schoharie grits.
- Number VIII, Rogers.** Pa. State Geol., 2d Ann. Rept., pp. 52-59. 1838.  
 Devonian. Pennsylvania. Exact syn. Olive slate.
- Number VIII, Rogers. Pa. State Geol., 4th Ann. Rept., pp. 91, 146. 1840.  
 Devonian. Pennsylvania. Exact syn. Olive slate.
- Number VIII, Chance. 2d Pa. Geol. Surv., Rept. G<sup>1</sup>, pp. 105-106. 1880.  
 Devonian. Pennsylvania. Includes Chemung and Portage.
- Number VIII, Stevenson. 2d Pa. Geol. Surv., Rept. T<sup>2</sup>, pp. 75-84. 1882.  
 Devonian. Pennsylvania. Includes Chemung, Portage, Genesee, Hamilton, and Marcellus.

Number VIII, D'Invilliers. 2d Pa. Geol. Surv., Rept. F<sup>4</sup>, pp. 45-50. 1891.

Devonian. Pennsylvania. Includes Chemung, Portage, Genesee, Hamilton, and Marcellus.

**Number VIIla**, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 1143-1193. 1892.

Devonian. Pennsylvania. Includes Upper Helderberg, Onondaga, and Corniferous limestones.

**Number VIIlb**, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 1194-1236. 1892.

Devonian. Pennsylvania. Exact syn. Marcellus, black shale.

**Number VIIlc**, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 1236-1307. 1892.

Devonian. Pennsylvania. Exact syn. Hamilton.

**Number VIIId**, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 1307-1322. 1892.

Devonian. Pennsylvania. Exact syn. Tully limestone.

**Number VIIle**, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 1323-1335. 1892.

Devonian. Pennsylvania. Exact syns. Genesee black slate, Cadent Upper black slate.

**Number VIIIf**, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 1337-1370. 1892.

Devonian. Pennsylvania. Includes Cashaqua shale and Gardeau shale. Exact syn. Portage.

**Number VIIIg**, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 1371-1566. 1892.

Devonian. Pennsylvania. Exact syn. Chemung.

**Number IX**, Rogers. Pa. State Geol., 2d Ann. Rept., pp. 59-63. 1838.

Devonian. Pennsylvania.

Number IX, Rogers. Pa. State Geol., 4th Ann. Rept., pp. 97, 147. 1840.

Devonian. Pennsylvania.

Number IX, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 1567-1627. 1892.

Devonian. Pennsylvania. Exact syn. Catskill.

**Number X**, Rogers. Pa. State Geol., 2d Ann. Rept., pp. 63-65. 1838.

Carboniferous. Pennsylvania.

Number X, Rogers. Pa. State Geol., 4th Ann. Rept., p. 98. 1840.

Carboniferous. Pennsylvania.

Number X, Platt. 2d Pa. Geol. Surv., Rept. H<sup>4</sup>, p. 311. 1878.

Carboniferous. Pennsylvania. Exact syns. Pocono-Vespertine.

Number X, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. i, pp. 1629-1789. 1895.

Carboniferous. Pennsylvania. Exact syn. Pocono formation.

**Number XI**, Rogers. Pa. State Geol., 2d Ann. Rept., pp. 65-68. 1838.

Carboniferous. Pennsylvania.

Number XI, Rogers. Pa. State Geol., 4th Ann. Rept., p. 98 et seq. 1840.

Carboniferous. Pennsylvania.

Number XI, Platt. 2d Pa. Geol. Surv., Rept. H<sup>4</sup>, p. 311. 1878.

Carboniferous. Pennsylvania. Exact syns. Mauch Chunk red shale, Umbral.

Number XI, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. i, pp. 1805-1853. 1895.

Carboniferous. Pennsylvania. Exact syns. Mauch Chunk red shale, Umbral.

**Number XII**, Rogers. Pa. State Geol., 2d Ann. Rept., pp. 68-71. 1838.

Carboniferous. Pennsylvania.

Number XII, Rogers. Pa. State Geol., 4th Ann. Rept., pp. 123-132, 199. 1840.

Carboniferous. Pennsylvania.

Number XII, Lesley. 2d Pa. Geol. Surv., Rept. I, pp. 63-66. 1875.

Carboniferous. Pennsylvania and Ohio.

Number XII, White. 2d Pa. Geol. Surv., Rept. Q<sup>2</sup>, pp. 51-70. 1877.

Carboniferous. Pennsylvania. Includes Piedmont or Tionesta sandstone, Mercer limestone, Connoquenessing sandstone, and Quakertown shale.

Number XII, Platt. 2d Pa. Geol. Surv., Rept. H<sup>4</sup>, p. 310. 1878.

Carboniferous. Pennsylvania. Exact syn. Pottsville conglomerate.

- Number XII, Chance. 2d Pa. Geol. Surv., Rept. G<sup>1</sup>, pp. 91-95. 1880.  
Carboniferous. Pennsylvania.
- Number XII, D'Invilliers. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. i, pp. 1857-1915. 1895.  
Carboniferous. Pennsylvania. Includes Homewood or Johnson Run sandstone, Connoquenessing or Kinzua sandstone, and Sharon, Olean or Garland conglomerate. Exact syns. Pottsville conglomerate, Seral conglomerate.
- Number XII, D'Invilliers. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. ii, pp. 2155-2405. 1895.  
Carboniferous. Pennsylvania. Exact syn. Lower Productive Measures, Allegheny River series.
- Number XII, Smith. 2d Pa. Geol. Surv., Final Rept., vol. ii, pt. i, pp. 1853-1855, 1920-1923, 1949-1951, 1953, 1959, 1966, 1975, 1984, 2000, 2009, 2025, 2031-2032, 2050, 2054. 1895.  
Carboniferous. Pennsylvania. Exact syn. Pottsville conglomerate.
- Number XIII, Rogers. Pa. State Geol., 2d Ann. Rept., pp. 71-79. 1838.  
Carboniferous. Pennsylvania. Exact syn. Anthracite Coal Measures.
- Number XIII, Rogers. Pa. State Geol., 3d Ann. Rept., pp. 82-87. 1839.  
Carboniferous. Pennsylvania. Included in Coal Measures.
- Number XIV, D'Invilliers. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. ii, pp. 2406-2447. 1895.  
Carboniferous. Pennsylvania. Exact syns. Barren Measures, Pittsburg series, and Elk River series of West Virginia.
- Number XV, D'Invilliers. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. ii, pp. 2448-2564. 1895.  
Carboniferous. Pennsylvania. Exact syns. Upper Productive or Monongahela River series.
- Number XVI, D'Invilliers. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. ii, pp. 2565-2588. 1895.  
Carboniferous. Pennsylvania. Includes Greene Co. group and Washington Co. group. Exact syns. Upper Barren Measures, and Permo-Carboniferous or Dunkard Creek series.
- Nummulite limestone, Lyell. Am. Jour. Sci., 2d ser., vol. iv, pp. 186-191. 1847.  
Eocene. Alabama. Exact syn. Orbitolite limestone.
- Nunda group, Vauxem. Geol. of N. Y., pt. iii, p. 172. 1842.  
Paleozoic. New York. Included in New York system. Exact syn. Portage group.
- Nunda group, Hall. Geol. of N. Y., pt. iv, 4th Geol. Dist., pp. 18, 224-241. 1843.  
Paleozoic. New York. Included in New York system. Exact syn. Portage group.
- Nushagak beds, Spurr. U. S. Geol. Surv., 20th Ann. Rept., pt. vii, pp. 173-174, 184. 1900.  
Tertiary. Alaska. Included in Neocene.
- Nussbaum formation, Gilbert. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 36. 1897.  
Colorado. Included in Neocene.
- Nussbaum formation, Hills. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 58. 1899.  
Colorado. Included in Neocene(?).
- Nussbaum formation, Hills. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 68. 1900.  
Colorado. Included in Neocene.
- Nutzotin series, Brooks. U. S. Geol. Surv., 21st Ann. Rept., pt. ii, p. 359. 1900.  
Alaska.

- Oak Creek** beds, Ward. U. S. Geol. Surv., 19th Ann. Rept., pt. ii, p. 593. 1899.  
Cretaceous. South Dakota.
- Oak Creek** beds, Jenney. U. S. Geol. Surv., 19th Ann. Rept., pt. ii, pp. 568-587, 593.  
1899.  
Cretaceous. South Dakota. Included in Dakota group.
- Oak Grove** sands, Dale. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 340. 1898.  
Tertiary. Florida.
- Oakland** limestone lentils, Diller. U. S. Geol. Surv., Geol. Atlas of U. S., Folio  
No. 49. 1898.  
Oregon. Included in Eocene.
- Oakville**, Dumble. Jour. of Geol., vol. ii, pp. 556-559. 1894.  
Tertiary. Texas. Included in Miocene.
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Florida.
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Montpelier formations.
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- Ocheesee** beds, Dall. Wagner Free Inst. Sci., Trans., vol. iii, pt. ii, p. 209. 1892.  
Miocene. Florida. Included in Chipola epoch, Chattahoochee group. Part. syn.  
Chattahoochee group.
- Ocoee** conglomerate and slates, Safford. Geol. Recon. of the State of Tenn., 1st  
Rept., pp. 151-152. 1856.  
Tennessee. Included in Metamorphic Rocks.
- Ocoee** conglomerate and slates, Safford. Geol. of Tenn., by Safford, pp. 183-198.  
1869.  
Silurian. Tennessee. Included in Potsdam group.
- Ocoee** group, Killebrew and Safford. Resources of Tennessee, pp. 28-29. 1874.  
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- Ocoee** group, Bradley. Ann. Jour. Sci., 3d ser., vol. ix, p. 283. 1875.  
Cambrian. Tennessee. Exact syn. Lower Potsdam (Acadian).
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- Ocoee** series, Hayes. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 20. 1895.  
Algonkian(?). Tennessee. Includes Wilhite slate, Citico conglomerate, Pigeon  
slate, and Thunderhead conglomerate and slate.
- Ocoee** group, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 16, 25.  
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slate, and Clingman conglomerate.



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Devonian. Utah.
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- gishke conglomerate, Grant. Am. Geol., vol. x, p. 4. 1892.  
Archean. Minnesota.
- Ohio** black slate, Andrews. Ohio Geol. Surv., Rept. Prog., 1869, p. 62. 1870.  
Ohio.
- Ohio shale, Shaler. Ky. Geol. Surv., new ser., vol. iii, pp. 169-175. 1877.  
Devonian. Kentucky. Exact syns. Huron shale. Includes all from top of Oriskany to top of Chemung.
- Ohio shale, Orton. Rev. of Strat. Geol. of eastern Ohio, p. 4. 1880.  
Devonian. Ohio. Exact syn. Black shale.
- Ohio shale, Orton. Ohio Geol. Surv., vol. vi, pp. 4, 23. 1888.  
Carboniferous. Ohio. Includes Cleveland shale, Erie shale, and Huron shale.
- Ohio shale, Herrick. Denison Univ. Sci. Lab., Bull., vol. iii, p. 26. 1888.  
Devonian. Ohio.
- Ohio shale, Orton. U. S. Geol. Surv., 8th Ann. Rept., pt. ii, p. 570. 1889.  
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Ohio.
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- Ohio shale, Bownocker. Denison Univ. Sci. Lab., Bull., vol. ii, art. ii, p. 14. 189  
Ohio.
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p. 1767. 1895.  
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sandstone, 3d Mountain sandstone, Cussewago shale, limestone, and sandstone.  
Exact syn. Berea group of Ohio.
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shales. Exact syns. Berea grit, Pithole grit. Part. syn. Pocono.
- Oklune** series, Spurr. U. S. Geol. Surv., 20th Ann. Rept., pt. vii, pp. 163-169, 188  
1900.  
Cretaceous. Alaska.
- Old Red** sandstone, Hall. Geol. of N. Y., pt. iv, 4th Geol. Dist., pp. 278-283. 184  
Paleozoic. New York. Includes Catskill group, Montrose and Oneonta sand  
stone, No. 11, Pennsylvania Survey.
- Old Red sandstone, Lesley. 2d Pa. Geol. Surv., Rept. I, pp. 97-102. 1875.  
Devonian. Pennsylvania and New York. Exact syn. No. IX.
- Olean** conglomerate, Sub-, Carll. 2d Pa. Geol. Surv., Rept. I<sup>4</sup>, pp. 189-195  
1883.  
Carboniferous. Pennsylvania. Exact syn. Shenango sandstone.
- Olean conglomerate, Ashburner. 2d Pa. Geol. Surv., Rept. R<sup>2</sup>, pp. 396-397. 1885  
Carboniferous. Pennsylvania.
- Olean conglomerate, Sub-, Ashburner. 2d Pa. Geol. Surv., Rept. R<sup>2</sup>, p. 402. 1885  
Carboniferous. Pennsylvania.
- Olean Conglomerate, Sub-, Carll. 2d Pa. Geol. Surv., Rept. I<sup>5</sup>, pp. 105-110. 1890  
Carboniferous, Pennsylvania. Included in Pocono. Exact syns. Shenango sand  
stone and Logan sandstone.
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1894.  
New York.
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1895.  
Carboniferous. Pennsylvania. Included in No. 10, Pocono.
- Olean conglomerate, D'Invilliers. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. i,  
pp. 1861, 1873, 1892. 1895.  
Carboniferous. Pennsylvania. Included in No. 12, Pottsville conglomerate.
- Olentangy** shale, Winchell. Ohio Geol. Surv., vol. ii, pp. 243, 287. 1874.  
Devonian. Ohio.
- Olentangy shale, Orton. Ohio Geol. Surv., vol. vi, pp. 4, 22. 1888.  
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- Olentangy shale, Orton. Ohio Geol. Surv., 3d Organization, 1st Ann. Rept., pp. 26-27.  
1890.  
Devonian. Ohio. Exact syn. Hamilton shale.
- Olentangy shale, Orton. Ohio Geol. Surv., vol. vii, pp. 4, 20. 1893.  
Devonian. Ohio. Exact syn. Hamilton shale.
- Oley Valley** slate, D'Invilliers. 2d Pa. Geol. Surv., Rept. D<sup>3</sup>, pt. ii, pp. 102-103.  
1883.  
Cambrian (?). Pennsylvania. Included in Potsdam (?).

**Olive shale**, Read. Ohio Geol. Surv., vol. iii, pp. 337, 523. 1878.

Carboniferous. Ohio. Included in Waverly.

**Oneida conglomerate**, Vanuxem. Geol. of N. Y., pt. iii, pp. 71-74. 1842.

Paleozoic. New York. Included in New York system. Includes Shawangunk conglomerate, Millstone grit, Gray band of Rochester, and No. 5, Pennsylvania Survey.

**Oneida conglomerate**, Hall. Geol. of N. Y., pt. iv, 4th Geol. Dist., pp. 18, 31. 1843.

Paleozoic. New York. Included in New York system. Exact syn. Shawangunk conglomerate.

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Silurian. New York.

**Oneida conglomerate**, Cook. Geol. of N. J., pp. 146-149. 1868.

Silurian. New Jersey. Exact syn. Shawangunk conglomerate or grit.

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Silurian. Ohio.

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Silurian. Appalachian region. Part. syn. Levant in part.

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Silurian. Pennsylvania. Included in No. 4.

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Silurian. Included in Medina group.

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Silurian. Pennsylvania. Included in No. 4, Medina.

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Silurian. Pennsylvania.

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Ordovician. New York.

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Devonian. New York.

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Devonian. New York. Included in Portage.

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Devonian. New York.

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Devonian. New York.

**Oneonta**, Clarke. N. Y. State Geol., 13th Ann. Rept., p. 557. 1894.

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Devonian. New York.

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Silurian. Iowa.

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Ordovician. Minnesota. Exact syn. Lower Magnesian.

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Ordovician (?). Minnesota. Included in Magnesian series.

**Oneota**, Keyes. Iowa Geol. Surv., vol. i, pp. 21-24. 1893.

Silurian. Iowa. Included in Lower Silurian. Exact syn. Lower Magnesian limestone.

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Upper Cambrian. Minnesota. Included in Magnesian series.
- Oneota limestone, Norton. Iowa Geol. Surv., vol. iii, pp. 182-184. 1895.  
Silurian. Iowa.
- Oneota limestone, Calvin. Iowa Geol. Surv., vol. iv, pp. 61-68. 1895.  
Silurian. Iowa. Included in Ordovician. Exact syns. Lower Magnesian limestone, Calciferous.
- Onondaga** group, Hall. N. Y. Geol. Surv., 3d Ann. Rept., pp. 290-293, 304. 1839.  
Silurian. New York.
- Onondaga limestone, Hall. N. Y. Geol. Surv., 3d Ann. Rept., pp. 309-310. 1839.  
Devonian. New York. Exact syn. Gray crinoidal limestone.
- Onondaga salt group, Vanuxem. N. Y. Geol. Surv., 4th Ann. Rept., pp. 375-376. 1840.  
Silurian. New York.
- Onondaga limestone, Hall. N. Y. Geol. Surv., 4th Ann. Rept., pp. 418-420, 427. 1840.  
Devonian. New York.
- Onondaga limestone, Hall. N. Y. Geol. Surv., 5th Ann. Rept., pp. 156-158. 1841.  
New York.
- Onondaga salt group, Mather. N. Y. Geol. Surv., 5th Ann. Rept., pp. 89-90. 1841.  
Silurian. New York.
- Onondaga salt group, Hall. Am. Jour. Sci., 1st ser., vol. xlii, p. 58. 1842.  
New York.
- Onondaga system, Conrad. Phil. Acad. Nat. Sci., Jour., vol. viii, pp. 233-234. 1842.  
Includes Upper Silurian.
- Onondaga limestone, Vanuxem. Geol. of N. Y., pt. iii, pp. 132-138. 1842.  
Paleozoic. New York. Included in New York system. Includes Gray sparry limestone.
- Onondaga salt group, Vanuxem. Geol. of N. Y., pt. iii, pp. 94-110. 1842.  
Paleozoic. New York. Included in New York system. Includes Calciferous slate, Second graywacke with shell lime rock of Eaton.
- Onondaga salt group, Hall. Geol. of N. Y., pt. iv, 4th Geol. Dist., pp. 18, 117-140. 1843.  
Paleozoic. New York. Included in New York system. Includes Calciferous slate, Second graywacke with shell lime rock of Eaton. Gypseous marls and slates.
- Onondaga limestone, Hall. Geol. of N. Y., pt. iv, 4th Geol. Dist., pp. 18, 151-157. 1843.  
Paleozoic. New York. Included in New York system. Corniferous lime rock. Includes Gray sparry limestone.
- Onondaga limestone, Mather. Geol. of N. Y., pt. i, p. 339. 1843.  
Paleozoic. New York. Included in Helderberg division.
- Onondaga salt group, Owen. Am. Jour. Sci., 2d ser., vol. i, pp. 43, 57. 1846.  
Silurian. New York. Included in Helderberg series (or division) of the New York system. Includes Magnesian deposits and Vermicular lime rock.
- Onondaga salt group, Emmons. Agric. of N. Y., vol. i, pp. 153-166. 1846.  
New York. Included in Helderberg division of New York system. Includes Manlius water-lime group.
- Onondaga limestone, Emmons. Agric. of N. Y., vol. i, pp. 174-179. 1846.  
New York. Included in Helderberg division of New York system. Includes Selenurus limerock, Seneca limestone, and Corniferous limestone.
- Onondaga salt group, Hall. Pal. of New York, vol. ii, p. 339. 1852.  
Silurian. New York.
- Onondaga limestone, Meek. Mo. Geol. Surv., 1st and 2d Ann. Repts., pt. ii, p. 103. 1855.  
Devonian. Missouri.

- Onondaga limestone, Swallow. Mo. Geol. Surv., 1st and 2d Ann. Repts., pp. 107, 178, 196. 1855.  
Devonian. Missouri.
- Onondaga salt group, Hall. Iowa Geol. Surv., vol. i, pt. i, pp. 76-80. 1858.  
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- Onondaga salt group, Hall and Whitney. Am. Jour. Sci., 2d ser., vol. xxvii, p. 112. 1859.  
Silurian. Iowa.
- Onondaga formation, Logan. Can. Geol. Surv., Rept. 1843-63, pp. 345-352. 1863.  
Upper Silurian. Canada.
- Onondaga formation, Chapman. Can. Inst., new ser., vol. viii, pp. 437-439. 1863.  
Silurian. Canada. Included in Upper Silurian.
- Onondaga group, Worthen. Ill. Geol. Surv., vol. iii, pp. 23-24, 39-40, 62-63. 1868.  
Devonian. Illinois.
- Onondaga limestone, Cook. Geol. of N. J., pp. 165-166. 1868.  
Devonian. New Jersey.
- Onondaga, Winchell. Am. Assoc. Adv. Sci., Proc., vol. xxii, p. 103. 1873.  
Devonian. Ohio.
- Onondaga, Winchell. Ohio Geol. Surv., vol. ii, p. 340. 1874.  
Devonian. Ohio. Included in Corniferous.
- Onondaga limestone, Broadhead. Mo. Geol. Surv., Rept. 1873-1874, p. 27. 1874.  
Devonian. Missouri.
- Onondaga, Ashburner. Am. Phil. Soc., Proc., vol. xvi, pp. 530, 555. 1877.  
Silurian. Appalachian region. Exact syns. Salina and Sealent.
- Onondaga salt group, Miller. Cin. Soc. Nat. Hist., Jour., vol. iv, no. iv, pp. 290, 291. 1881.  
Silurian.
- Onondaga group, Englemann and Worthen. Econ. Geol. of Ill., vol. i, pp. 461-462. 1882.  
Silurian (?). Illinois.
- Onondaga salt, Hall. Am. Assoc. Adv. Sci., Proc., vol. xxxi, p. 47. 1883.  
Silurian. Eastern United States.
- Onondaga, Claypole. Am. Phil. Soc., Proc., vol. xxi, p. 497. 1884.  
Silurian. Pennsylvania. Exact syn. Gypseous group.
- Onondaga, White. 2d Pa. Geol. Surv., Rept. T<sup>3</sup>, pp. 128-131. 1885.  
Silurian. Pennsylvania. Exact syn. Salina.
- Onondaga, Claypole. 2d Pa. Geol. Surv., Rept. F<sup>2</sup>, pp. 52-58. 1885.  
Silurian. Pennsylvania. Includes Bridgeport sandstone.
- Onondaga group, Miller. N. A. Geol. and Pal., p. 54. 1889.
- Onondaga salt group, Hopkins. Ark. Geol. Surv., 1890, vol. iv, p. 52. 1890.  
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- Onondaga limestone, Hopkins. Ark. Geol. Surv., 1890, vol. iv, pp. 52, 53. 1890.  
Devonian. Arkansas.
- Onondaga salt group, Prosser. Roch. Acad. Sci., Proc., vol. ii, pp. 50-124. 1892.  
Silurian. New York.
- Onondaga limestone, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, p. 1143 et seq. 1892.  
Devonian. Pennsylvania. Included in No. 8a.
- Onondaga, Brumell. Geol. Soc. Am., Bull., vol. iv, pp. 227, 230. 1893.  
Silurian. Ontario.
- Onondaga salt group, Prosser. Geol. Soc. Am., Bull., vol. iv, pp. 97, 108, 116. 1893.  
Upper Silurian. New York.

- Onondaga limestone, Darton. N. Y. State Geol., 13th Ann. Rept., pp. 203, 207-208 242-243, 301. 1894.  
 Devonian. New York. Exact syn. Corniferous.
- Onondaga limestone, Ries. N. Y. State Geol., 15th Ann. Rept., p. 403. 1897.  
 Devonian. New York. Exact syn. Corniferous.
- Onondaga limestone, Luther. N. Y. State Geol., 16th Ann. Rept., p. 214. 1899.  
 Devonian. New York.
- Onondaga limestone, Weller. N. J. Geol. Surv., Rept., 1899, p. 45. 1900.  
 Devonian. New Jersey.
- Ontario** division, Mather. Geol. of N. Y., pt. i, pp. 353-365. 1843.  
 Paleozoic. New York. Included in Shawangunk grit.
- Ontario division, Emmons. Agric. of N. Y., vol. i, pp. 141-152. 1846.  
 New York. Includes Medina sandstone, Clinton group, and Niagara group.
- Ontario group, Chapman. Can. Inst., new ser., vol. viii, p. 186. 1863.  
 Silurian. Canada. Included in Lower Silurina. Includes Birdseye and Black River formation, Trenton, Utica, and Hudson River.
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- Ontarian system, Lawson. Geol. Soc. Am., Bull., vol. i, p. 177. 1889.  
 Archean. Ontario.
- Ontarian, Dana. Geol. Soc. Am., Bull., vol. i, p. 41. 1889.  
 Upper Silurian. New York, etc. Exact syn. Ontario division of Mather.
- Ontarian, Winchell and Grant. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iv, p. 195. 1899.  
 Minnesota. Includes Couthiching and Keewatin.
- Ontarie, Clarke and Schuchert. Science, new ser., vol. x, p. 876. 1899.  
 Silurian. New York. Exact syn. Siluric.
- Oostanala** series, Spencer. Ga. Geol. Surv., The Paleozoic Group, pp. 34, 37, 77, 87, 99, 108, 112, 115, 119, 123, 130. 1893.  
 Cambrian. Georgia. Included in Middle and Upper Cambrian. Includes Knox or Connesauga shale, and Knox or Rome sandstone.
- Ophian**, Witney and Wadsworth. Harvard Mus. Comp. Zool., Bull., vol. vii, 1880-84, p. 562. 1884.  
 Included in Azoic system.
- Orange Martin** limestone, Owen. Geol. Reconm. Indiana; Rept. 1859-60, p. 126. 1862.  
 Carboniferous. Indiana. Included Eocarboniferous limestone.
- Orange Sand** group, Safford. Geol. Reconm. of the State of Tenn., 1st Rept., p. 162. 1856.  
 Cretaceous. Tennessee.
- Orange Sand group, Harper. Prelim. Rept. Geol. and Agric. Miss., p. 107. 1857.  
 Mississippi. Included in rocks overlying the Cretaceous formation.
- Orange Sand formation, Hilgard. Rept. on Geol. and Agric., Miss., pp. 4-46. 1860.  
 Quaternary. Mississippi.
- Orange Sand, Safford. Am. Jour. Sci., 2d ser., vol. xxxvii, p. 369. 1864.  
 Tertiary. Tennessee. Exact syn. La Grange group.
- Orange Sand, Hilgard. Am. Jour. Sci., 2d ser., vol. xli, pp. 311-318; vol. xlii, p. 346. 1866.  
 Quaternary. Mississippi.
- Orange Sand or La Grange group, Safford. Geol. of Tenn., pp. 424-428. 1869.  
 Tertiary. Tennessee.



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Quaternary. Louisiana.
- Orange Sand, Hilgard. Am. Jour. Sci., 2d ser., vol. xlvii, pp. 77-88. 1869.  
Quaternary (?). Louisiana.
- Orange Sand, Hilgard. Am. Jour. Sci., 3d ser., vol. ii, pp. 398-401. 1871.  
Pleistocene. Mississippi Valley and Gulf region.
- Orange Sand, Killebrew and Safford. Resources of Tenn., p. 45. 1874.  
Quaternary. Tennessee.
- Orange Sand, Hilgard. Smithsonian Inst. Contr., vol. xxiii, no. 2, p. 3. 1881.  
Tertiary. Louisiana.
- Orange Sand, Salisbury. Am. Jour. Sci., 3d ser., vol. xlii, pp. 252-253. 1891.  
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pp. 364-377. 1891.  
Pre-Pleistocene. Mississippi Valley.
- Orange Sand, Dall. Wagner Free Inst. Sci., Trans., vol. iii, pt. ii, p. 209. 1892.  
Pliocene. Gulf and Atlantic States. Included in Floridian epoch, Lafayette group.  
Part syn. Lafayette group.
- Orangeburg** formation, Dall. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 344.  
1898.  
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- Oriskany sandstone**, Hall. *Geol. of N. Y.*, pt. iv, 4th Geol. Dist., pp. 18, 146-148. 1843.  
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- Pamunkey**, Darton. U. S. Geol. Surv., Bull. No. 138, pp. 119, 125, 163. 1896.  
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Pamunkey formation, Clark. Md. Geol. Surv., vol. i, pp. 156, 195. 1897.

Tertiary. Maryland. Included in Eocene. Includes Aquia Creek stage, Woodstock stage.

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Tertiary. Maryland, Virginia. Included in Eocene.

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Devonian. Pennsylvania and New York.

Panama conglomerate, Carll. 2d Pa. Geol. Surv., Rept. I<sup>4</sup>, pp. 195-203. 1883.

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North Carolina.

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- Pilot Knob** conglomerate, Keyes. Mo. Geol. Surv., vol. iv, pp. 30, 31. 1894.  
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Minnesota. Included in Potsdam.
- Piscataway**, Heilprin. Phil. Acad. Nat. Sci., Jour., vol. ix, pp. 124-127. 1884.  
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Carboniferous and Trias. California.
- Pittsburg** series, Rogers. Pa. State Geol., 3d Ann. Rept., pp. 88-108. 1839.  
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- Potomac, Fontaine. U. S. Geol. Surv., Bull. 145. 1896.  
Cretaceous. Virginia. Exact syn. Neocomian.
- Potomac, Marsh. Science, new ser., vol. iv, p. 805. 1896.  
Cretaceous. Atlantic Coastal Plain.
- Potomac, Marsh. Am. Jour. Sci., 4th ser., vol. ii, pp. 436-437. 1896.  
Maryland. Part. syn. Alantosaurus.
- Potomac group, Clark. Md. Geol. Surv., vol. i, p. 156. 1897.  
Cretaceous, Jurassic(?). Maryland. Includes Raritan, Patapsco, Arundel, and Patuxent.
- Potomac formation, Stanton. Jour. of Geol., vol. v, pp. 587-592. 1897.  
Cretaceous. Included in Lower Cretaceous.
- Potomac marble, Hopkins. Ark. Geol. Surv., 1890, vol. iv, p. 56. 1890.  
Triassic. Arkansas.
- Potomac marble, Clark. Md. Geol. Surv., vol. ii, p. 171. 1898.  
Triassic. Maryland. Included in Red beds, Newark formation. Exact syns. Potomac breccia, and Calico rock.
- Potosi** limestone, Keyes. Mo. Geol. Surv., vol. vi, p. 331. 1894.  
Cambrian. Missouri. Included in St. François limestone, Ozark series. Part. syns. Jefferson City limestone and Moreau sandstone.
- Potosi limestone, Winslow. U. S. Geol. Surv., Bull. No. 132, p. 17. 1896.  
Missouri.
- Potosi rhyolite series, Cross. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 57. 1899.  
Tertiary. Colorado.
- Potsdam** sandstone, Emmons. N. Y. Geol. Surv., 2d Ann. Rept., pp. 214-215. 1838.  
Cambrian. New York.
- Potsdam sandstone, Mather. N. Y. Geol. Surv., 5th Ann. Rept., pp. 101-103. 1841.  
Cambrian. New York.
- Potsdam, Conrad. Phil. Acad. Nat. Sci., Jour., vol. viii, p. 230. 1842.  
Lower Silurian.

Potsdam sandstone, Emmons. Geol. of N. Y., pt. ii, pp. 102-105, 177, 266, 331, 360, 377. 1842.

Paleozoic. New York. Included in New York Transition system, Champlain group.

Potsdam sandstone, Vanuxem. Geol. of N. Y., pt. iii, pp. 28-29. 1842.

Paleozoic. New York. Included in New York system. Includes Potsdam and Keeseville sandstone, No. 1, Pennsylvania Survey.

Potsdam sandstone, Mather. Geol. of N. Y., pt. i, pp. 418-421. 1843.

Paleozoic. New York. Included in Champlain division.

Potsdam sandstone, Hall. Geol. of N. Y., pt. iv, 4th Geol. Dist., pp. 18, 27. 1843.

Paleozoic. New York. Included in New York system. Exact syn. No. 1, Pennsylvania Survey.

Potsdam sandstone, Emmons. Agric. of N. Y., vol. i, pp. 117-118. 1846.

New York. Included in Champlain division of New York system.

Potsdam sandstone, Murray. Can. Geol. Surv., Rept. of Prog., pp. 1847-48. 1849. Ontario.

Potsdam sandstones, Foster and Whitney. Rept. on Geol. of Lake Superior dist., pt. ii, p. 113, Special Sess., Mar. 1851. Ex. Doc. No. 4. 1851.

Lake Superior region.

Potsdam sandstone, Foster and Whitney. Am. Jour. Sci., 2d ser., vol. xvii, p. 29. Abstract. 1854.

Silurian. Michigan.

Potsdam sandstone, Hall. Iowa Geol. Surv., vol. i, pt. i, pp. 47-49. 1858.

Cambrian. Iowa.

Potsdam sandstone, Whitney. Iowa Geol. Surv., vol. i, pt. i, pp. 328-331. 1858.

Cambrian, Iowa.

Potsdam sandstone, Shumard. Am. Jour. Sci., 2d ser., vol. xxxii, p. 216. 1861.

Silurian. Texas.

Potsdam, Hall. Am. Jour. Sci., 2d ser., vol. xxxi, p. 222. 1861.

Vermont.

Potsdam sandstone, Hayden. Am. Jour. Sci., 2d ser., vol. xxxi, p. 233. 1861.

Silurian. South Dakota.

Potsdam sandstone, Marcou. Boston. Soc. Nat. Hist., Proc., vol. viii, 1861-62, pp. 241-242. 1861.

Vermont and Canada. Included in Upper Taconic of Marcou.

Potsdam sandstone, Hitchcock. Geol. of Vt., vol. i, pp. 264-266. 1861.

Paleozoic. Vermont. Included in Potsdam period.

Potsdam sandstone, Whitney. Rept. on Upper Mississippi Lead region, p. 140. 1862.

Cambrian. Wisconsin. Exact syn. Lower sandstone.

Potsdam, Billings. Am. Jour. Sci., 2d ser., vol. xxxii, pp. 100-105. 1862.

Silurian. Vermont.

Potsdam sandstone, Hayden. Am. Jour. Sci., 2d ser., vol. xxxiii, pp. 68-79. 1862.

Silurian. South Dakota.

Potsdam sandstone, Hayden. Am. Phil. Soc., Trans., new ser., vol. xii, pp. 36-38. 1863.

Cambrian. Black Hills. Included in Lower Silurian.

Potsdam, Hall. Regents Univ. of N. Y., 16th Ann. Rept., pp. 210-220. 1863.

Silurian. Lake Superior region, Mississippi Valley. Included in Lower Silurian. Includes Lower sandstone of Upper Mississippi Valley, Second sandstone, Third Magnesian limestone, Third sandstone, and Fourth Magnesian limestone of Missouri.

Potsdam group, Chapman. Can. Inst., new ser., vol. viii, pp. 186-190. 1863.

Cambrian. Canada. Included in Lower Silurian. Includes Beauharnois and Kaministiquia formations.

- Potsdam group, Logan. Can. Geol. Surv., Rept., 1843-63, pp. 87-109. 1863.  
Cambrian. Canada. Included in Lower Silurian.
- Potsdam sandstone, Winchell. Am. Jour. Sci., 2d ser., vol. xxxvii, pp. 226-232. 1864.  
Silurian. Wisconsin.
- Potsdam, Buckley. Prelim. Rept. on Geol. of Texas, pp. 16-22. 1866.  
Cambrian. Texas.
- Potsdam sandstone, Cook. Geol. of N. J., pp. 71-89. 1868.  
Cambrian. New Jersey.
- Potsdam sandstone, Perry. Am. Jour. Sci., 2d ser., vol. xlvii, p. 344. 1869.  
Silurian. Vermont.
- Potsdam group, Safford. Geol. of Tenn., by Safford, pp. 182-226. 1869.  
Silurian. Tennessee. Included in Lower Silurian. Includes Ocoee conglomerate and slates, Chilhowee sandstone, and Knox group.
- Potsdam sandstone, White. Iowa Geol. Surv., vol. i, pp. 171-172. 1870.  
Cambrian. Iowa. Included in Primordial group of Lower Silurian.
- Potsdam group, Richardson. Can. Geol. Surv., Rept., 1866-69, pp. 120-130. 1871.  
Cambrian. Canada. Included in Lower Silurian.
- Potsdam sandstone, Brooks. Am. Jour. Sci., 3d ser., vol. iv, pp. 22-26. 1872.  
Cambrian. New York.
- Potsdam sandstone, Irving. Wis. Acad. Sci., Trans., vol. i-ii, 1870-72, pp. 129-137. 1872.  
Wisconsin.
- Potsdam sandstone, Eaton. Wis. Acad. Sci., Trans., vol. i-ii, 1870-72, p. 125. 1872.  
Wisconsin.
- Potsdam sandstone, Winchell. Minn. Geol. and Nat. Hist. Surv., Ann. Rept., 1872, pp. 68-80. 1873.  
Silurian. Minnesota.
- Potsdam, Lower, Ford. Am. Jour. Sci., 3d ser., vol. vi, p. 134. 1873.  
Cambrian. New York. Exact syn. Olenellus or Georgia slates of Vermont, Olenellus limestones, and Labrador.
- Potsdam sandstone, Eaton. Am. Jour. Sci., 3d ser., vol. v, p. 446. 1873.  
Cambrian. Wisconsin.
- Potsdam, Newberry. Ohio Geol. Surv., vol. i, pt. i, pp. 58, 112. 1873.  
Silurian. Ohio.
- Potsdam sandstone, Winchell. Rept. of a Reconm. of the Black Hills by Capt. Ludlow, pp. 63-64. 1875.  
Cambrian. South Dakota.
- Potsdam sandstone, Irving. Am. Jour. Sci., 3d ser., vol. ix, p. 441. 1875.  
Cambrian. Wisconsin. Included in Primordial.
- Potsdam sandstone, Fontaine. Am. Jour. Sci., 3d ser., vol. ix, pp. 367-368, 419-421, 424. 1875.  
Cambrian. Virginia.
- Potsdam, Prime. 2d Pa. Geol. Surv., Rept. D, pp. 5-7. 1875.  
Cambrian. Pennsylvania. Exact syn. No. 1.
- Potsdam, Hotchkiss. A Geogr. and Political Summary of Virginia, p. 22. 1876.  
Cambrian and Lower Silurian. Virginia. Exact syns. Primal, Formation No. i, Rogers.
- Potsdam, Smith. Ala. Geol. Surv., Rept., 1875, pp. 13, 132, 173. 1876.  
Cambrian. Alabama.
- Potsdam sandstone, Chamberlin. Geol. of Wis., vol. ii, pp. 257-267. 1877.  
Lower Silurian. Wisconsin. Includes Madison sandstone and Mendota limestone.
- Potsdam, Prime. Am. Phil. Soc., Proc., vol. xvi, p. 248. 1877.  
Pennsylvania. Exact syn. No. 1.



- Potsdam, Emmons. U. S. Geol. Expl. of 40th Parallel, vol. ii, p. 343 et seq. 1877  
Cambrian. Utah.
- Potsdam sandstone, Prime. Am. Jour. Sci., 3d ser., vol. xv, p. 262. 1878.  
Cambrian. Pennsylvania.
- Potsdam, Prime. 2d Pa. Geol. Surv., Rept. D<sup>2</sup>, pp. 7-10. 1878.  
Cambrian. Pennsylvania. Exact syn. No. 1.
- Potsdam, Endlich. U. S. Geol. and Geog. Surv. of Terr., 11th Ann. Rept., pp. 70, 101, 118. 1879.  
Silurian. Wyoming.
- Potsdam sandstone, Wadsworth. Harvard Coll. Mus. Comp. Zool., Bull., vol. vii, 1880-1884, p. 60. 1880.
- Potsdam sandstone, Newton. Geol. of Black Hills, pp. 80-107. 1880.  
Cambrian. South Dakota.
- Potsdam sandstone, Strong. Geol. of Wis., vol. iii, pp. 395-397. 1880.  
Cambrian. Wisconsin. Includes Madison sandstone and Mendota limestone.
- Potsdam sandstone, Whittlesey. Geol. of Wis., vol. iii, p. 220. 1880.  
Cambrian. Wisconsin.
- Potsdam, Hall. 2d Pa. Geol. Surv., Rept. C<sup>6</sup>, pp. 38-46. 1881.  
Cambrian. Pennsylvania. Exact syn. Rogers's Primal.
- Potsdam group, Miller. Cin. Soc. Nat. Hist., Jour., vol. iv, no. iv, p. 267. 1881.  
Ordovician.
- Potsdam, Platt. 2d Pa. Geol. Surv., Rept. T, p. 51. 1881.  
Cambrian. Pennsylvania.
- Potsdam sandstone, Winchell. Minn. Geol. and Nat. Hist. Surv., 10th Ann. Rept., pp. 123-136. 1882.  
Minnesota.
- Potsdam sandstone, Wooster. Geol. of Wis., vol. iv, pp. 109-123. 1882.  
Cambrian, Wisconsin.
- Potsdam sandstone, Strong. Geol. of Wis., vol. iv, pp. 38-64. 1882.  
Cambrian. Wisconsin.
- Potsdam, Selwyn. Science, vol. i, p. 11. 1883.  
Cambrian. Canada.
- Potsdam, Lesley. 2d Pa. Geol. Surv., Rept. C<sup>4</sup>, pp. 144-160. 1883.  
Cambrian. Pennsylvania. Exact syn. Primal slate of Rogers.
- Potsdam, D'Invilliers. 2d Pa. Geol. Surv., Rept. D<sup>3</sup>, pt. ii, pp. 99-136. 1883.  
Cambrian. Pennsylvania. Exact syn. No. 1.
- Potsdam, Prime. 2d Pa. Geol. Surv., Rept. D<sup>3</sup>, pt. i, pp. 205-214. 1883.  
Cambrian. Pennsylvania. Exact syn. No. 1.
- Potsdam, Chamberlin. Geol. of Wis., vol. i, p. 119. 1883.  
Cambrian. Wisconsin.
- Potsdam quartzite, Winchell. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. i, p. 537. 1884.  
Minnesota.
- Potsdam quartzite, Upham. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. i, p. 572. 1884.  
Minnesota.
- Potsdam group, Campbell. The Virginias, vol. vi, p. 99. 1885.  
Cambrian. Virginia.
- Potsdam group, Campbell. Am. Jour. Sci., 3d ser., vol. xxix, pp. 470-474. 1885.  
Cambrian. Virginia.
- Potsdam, Dwight. Am. Jour. Sci., 3d ser., vol. xxxi, pp. 125-132. 1886.  
Cambrian. New York.

- Potsdam, Dwight. *Am. Assoc. Adv. Sci., Proc.*, vol. xxxiv, p. 204. 1886.  
Cambrian. New York.
- Potsdam sandstone, Upham. *Minn. Geol. and Nat. Hist. Surv., Final Rept.*, vol. ii, pp. 117, 157. 1888.  
Cambrian. Minnesota.
- Potsdamic, Hitchcock. *Boston Soc. Nat. Hist., Proc.*, vol. xxiv, 1888-90, p. 37. 1888.
- Potsdam group, Miller. *N. A. Geol. and Pal.*, p. 29. 1889.
- Potsdam, Winchell. *Minn. Geol. and Nat. Hist. Surv., 17th Ann. Rept.*, pp. 49-56. 1889.  
Minnesota.
- Potsdam sandstone, Hall. *Minn. Acad. Nat. Sci., Bull.*, vol. iii, p. 135. 1889.  
Cambrian. Minnesota.
- Potsdam, Walcott. *U. S. Geol. Surv., Bull. No. 87*, pp. 113, 180, 202, 214, 217, 244. 1891.  
Cambrian. Lake Superior, Rocky Mts., Texas, Appalachian region. Included in Upper Cambrian.
- Potsdam sandstone, McGee. *U. S. Geol. Surv., 11th Ann. Rept.*, pt. i, p. 333. 1891.  
Cambrian. Iowa.
- Potsdam sandstone, Hall and Sardeson. *Geol. Soc. Am., Bull.*, vol. iii, p. 335. 1892.  
Cambrian. Minnesota. Included in Upper Cambrian.
- Potsdam, Prosser. *Geol. Soc. Am., Bull.*, vol. iv, pp. 108, 110. 1893.  
Cambrian. New York.
- Potsdam sandstone, Darton. *N. Y. State Geol., 13th Ann. Rept.*, pp. 410-417. 1894.  
Cambrian. New York.
- Potsdam sandstone, Cushing. *N. Y. State Geol., 13th Ann. Rept.*, pp. 478-479. 1894.  
Cambrian. New York.
- Potsdam, Cushing. *Geol. Soc. Am., Bull.*, vol. vi, p. 287. 1895.  
Cambrian. New York.
- Potsdam, Udden. *U. S. Geol. Surv., 17th Ann. Rept.*, pt. ii, p. 839. 1896.  
Cambrian. Illinois.
- Potsdam sandstone, Cushing. *N. Y. State Geol., 15th Ann. Rept.*, vol. i, p. 510. 1897.  
Cambrian. New York.
- Potsdam sandstone, Buckley. *Wis. Geol. and Nat. Hist. Surv., Bull. No. 4, Econ. ser.*, No. ii, pp. 167-248. 1898.  
Cambrian. Wisconsin.
- Potsdam sandstone, Wadsworth. *Am. Inst. Mg. Engrs., Trans.*, vol. xxvii, p. 683. 1898.  
Cambrian. Lake Superior region.
- Potsdam formation, Walcott. *Geol. Soc. Am., Bull.*, vol. x, p. 225. 1899.  
Cambrian. Wisconsin.
- Potsdam sandstone, Salisbury and Atwood. *Wis. Geol. and Nat. Hist. Surv., Bull. No. 5, Ed. ser.*, no. i, pp. 27-31. 1900.  
Cambrian. Wisconsin.
- Pottawatomie** formation, Haworth. *Kan. Univ. Geol. Surv.*, vol. iii, pp. 92-93, 94. 1898.  
Carboniferous. Kansas. Included in Upper Coal Measures. Includes Garnett limestones, Lane shales, Iowa limestones, Thayer shales, and Erie limestone.
- Potters Clay** formation, Rogers. *N. J. Geol. Surv., Final Rept.*, pp. 179-186. 1840.  
Cretaceous. New Jersey.
- Pottery** shale, Wheeler. *Mo. Geol. Surv.*, vol. ix, Sheet Rept., No. 2, p. 65. 1896.  
Carboniferous. Missouri. Included in Coal Measures.
- Pottstown** shale, Lyman. *2d Pa. Geol. Surv., Final Rept.*, vol. iii, pt. ii, pp. 2607-2608. 1895.  
Juratrias. Pennsylvania. Included in New Red.

**Pottsville conglomerate, Ashburner.** Am. Phil. Soc., Proc., vol. xvi, pp. 520, 535. 1877.

Carboniferous. Pennsylvania. Included in Piedmont sandstone, Kanawha River coal series. Exact syns. Seral, Millstone grit.

**Pottsville conglomerate, Stevenson.** 2d Pa. Geol. Surv., Rept. K<sup>2</sup>, pp. 91-95. 1877.

Carboniferous. Pennsylvania. Exact syn. Seral.

**Pottsville conglomerate, Platt.** 2d Pa. Geol. Surv., Rept. H<sup>2</sup>, pp. xxiv-xxvi. 1877.

**Pottsville conglomerate, Stevenson.** 2d Pa. Geol. Surv., Rept. K<sup>3</sup>, pp. 44-46. 1878.

Carboniferous. Pennsylvania. Exact. syn. Seral.

**Pottsville conglomerate, Ashburner.** 2d Pa. Geol. Surv., Rept. F, pp. 191-194. 1878.

Carboniferous. Pennsylvania. Exact. syn. Seral conglomerate.

**Pottsville conglomerate, Chance.** 2d Pa. Geol. Surv., Rept. V, pp. 31-34. 1879.

Carboniferous. Pennsylvania. Includes Homewood sandstone, Mercer group, Connoquenessing sandstone. Exact syn. No. 12.

**Pottsville, Chance.** 2d Pa. Geol. Surv., Rept. V<sup>2</sup>, pp. 59-63. 1880.

Carboniferous. Pennsylvania.

**Pottsville, Ashburner.** 2d Pa. Geol. Surv., Rept. R, pp. 49-62. 1880.

Carboniferous. Pennsylvania. Includes Johnson River sandstone, Kinzua Creek sandstone, and Olean conglomerate. Exact syns. Seral, Millstone grit.

**Pottsville, White.** 2d Pa. Geol. Surv., Rept. Q<sup>4</sup>, pp. 55-65. 1881.

Carboniferous. Pennsylvania. Includes Homewood sandstone, Mercer group, Connoquenessing group, and Sharon group. Exact syn. No. 12.

**Pottsville conglomerate, White.** 2d Pa. Geol. Surv., Rept. G<sup>5</sup>, pp. 45-53. 1881.

Carboniferous. Pennsylvania. Exact syn. No. 12.

**Pottsville, Platt.** 2d Pa. Geol. Surv., Rept. H<sup>6</sup>, pp. xxxiii-xxxiv. 1881.

Carboniferous. Pennsylvania. Exact syn. No. 12.

**Pottsville, Stevenson.** 2d Pa. Geol. Surv., Rept. T<sup>2</sup>, pp. 65-67. 1882.

Carboniferous. Pennsylvania.

**Pottsville, Carll.** 2d Pa. Geol. Surv., Rept. I<sup>4</sup>, pp. 185-189. 1883.

Carboniferous. Pennsylvania. Includes Johnsons River rock, Kinzua Creek sandstone, and Olean conglomerate. Exact syn. No. 12.

**Pottsville, White.** 2d Pa. Geol. Surv., Rept. T<sup>3</sup>, pp. 69-73. 1885.

Carboniferous. Pennsylvania. Includes Homewood (Johnson River) sandstone, Connoquenessing (Kinzua Creek) sandstones, and Sharon conglomerate.

**Pottsville conglomerate, Ashburner.** 2d Pa. Geol. Surv., Rept. R<sup>2</sup>, p. 399. 1885.

Carboniferous. Pennsylvania. Exact syn. No. 12.

**Pottsville conglomerate, Winslow.** 2d Pa. Geol. Surv., Ann. Rept., 1886, pt. iv, pp. 1337, 1363. 1887.

Carboniferous. Pennsylvania. Exact syn. No. 12.

**Pottsville, Carll.** 2d Pa. Geol. Surv., Rept. I<sup>5</sup>, pp. 111-112, 126-128. 1890.

Carboniferous. Pennsylvania.

**Pottsville conglomerate, White.** U. S. Geol. Surv., Bull. No. 65, p. 179. 1891.

Carboniferous. Ohio, Pennsylvania, West Virginia. Included in Homewood sandstone, Mercer group, Connoquenessing sandstone, New River Coal group, and Sharon conglomerate.

**Pottsville conglomerate, White.** Geol. Soc. Am., Bull., vol. iii, p. 190. 1892.

Upper Carboniferous. West Virginia.

**Pottsville, Williams and Clark.** Maryland. Its Resources, Industries, and Institutions, p. 72. 1893.

Carboniferous. Maryland. Part. syn. No. xii.

**Pottsville conglomerate, Smith.** 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. i, pp. 1853-1855, 1949-1951 et seq. 1895.

Carboniferous. Pennsylvania. Exact syn. No. xii.

- Pottsville conglomerate, D'Inwilliers. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. i, pp. 1857-1915. 1895.
- Carboniferous. Pennsylvania. Includes Homewood or Johnson River sandstone, Connoquenessing or Kinzua sandstone, and Sharon, Olean, or Garland conglomerate. Exact syn. No. 12, Seral conglomerate of Rogers.
- Pottsville formation, Clark. Md. Geol. Surv., vol. i, pp. 156, 185-186. 1897.
- Carboniferous. Maryland. Exact syn. Blackwater formation.
- Pottsville, Clark. Md. Geol. Surv., vol. ii, p. 208. 1898.
- Carboniferous. Maryland. Included in Coal Measures.
- Pottsville conglomerate, White. W. Va. Geol. Surv., vol. i, p. 202. 1899.
- Carboniferous. West Virginia.
- Pottsville, Clark. Md. Geol. Surv., vol. iii, p. 100. 1899.
- Carboniferous. Maryland. Included in Coal Measures.
- Pottsville formation, White. U. S. Geol. Surv., 20th Ann. Rept., pt. ii, pp. 755-865. 1900.
- Carboniferous. Pennsylvania. Includes Clark, Quinnemont, Sewell, and Lookout formations, and Fayette sandstone.
- Pottsville formation, O'Harra. Md. Geol. Surv., Allegany County, p. 113. 1900.
- Carboniferous. Maryland.
- Poughquag** limestone and quartzite, Dana. Am. Jour. Sci., 3d ser., vol. iii, pp. 252-253, 255. 1872.
- Silurian. New York.
- Powelton** shale, White. 2d Pa. Geol. Surv., Rept. T<sup>3</sup>, pp. 61-62. 1885.
- Carboniferous. Pennsylvania.
- Poxono Island** shale, White. 2d Pa. Geol. Surv., Rept. G<sup>6</sup>, pp. 145-147. 1882.
- Silurian. Pennsylvania. Included in Upper Helderburg or No. vi.
- Poxono Island shale and limestone, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 934-935. 1892.
- Silurian. Pennsylvania. Included in No. vi.
- Poxono Island shale, Weller. N. J. Geol. Surv., Rept. 1899, pp. 5-6. 1900.
- Silurian. New Jersey.
- Prairie Bluff** limestone, Winchell. Am. Assoc. Adv. Sci., Proc., vol. x, p. 90. 1856.
- Cretaceous. Alabama. Included in Upper Cretaceous.
- Prairie d'Ane** or White Clay till, Hill. Ark. Geol. Surv., 1888, vol. ii, pp. 32-33. 1888.
- Post-Tertiary. Arkansas.
- Pre-Meridian** series, Rogers. Geol. of Pa., vol. i, pp. 107, 136-137, 272 et seq., vol. ii, p. 754. 1858.
- Silurian. Pennsylvania. Exact syn. Lower Helderberg.
- Preston** beds, Hill. Geol. Soc. Am., Bull., vol. v, p. 302. 1894.
- Cretaceous. Texas. Included in Washita division. Includes Duck Creek and Kiamitia.
- Price** sandstone, Campbell. Geol. Soc. Am., Bull., vol. v, pp. 171, 177. 1894.
- Lower Carboniferous. Virginia. Included in Pocono.
- Price, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 26. 1896.
- Carboniferous. Virginia and West Virginia.
- Price sandstone, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 44. 1897.
- Carboniferous. Virginia and West Virginia. Exact syn. No. x, Montgomery grits.
- Primal** series, Rogers. Am. Jour. Sci., 1st ser., vol. xlvii, p. 155. 1844.
- Primal series, Rogers. Geol. of Pa., vol. i, pp. 104, 122-123, 150-207 et seq., vol. ii, p. 751. 1858.
- Cambrian. Pennsylvania. Part. syn. Potsdam.

Primal, Walcott. U. S. Geol. Surv., Bull. No. 81, pp. 126, 251, 288. 1891.

Cambrian. Appalachian region.

**Primedidial** series, Rogers. Am. Jour. Sci., 1st ser., vol. xlvii, p. 155. 1844.

Silurian. Includes Pentamerus and Catskill shaly limestone and Oriskany limestone.

**Princeton** conglomerate, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 26. 1896.

Carboniferous. Virginia and West Virginia.

Princeton conglomerate, Campbell and Mendenhall. U. S. Geol. Surv., 17th Ann. Rept., pt. ii, p. 489. 1896.

Carboniferous. West Virginia. Included in No. xii of Rogers, Conglomerate series of Fontaine.

Princeton conglomerate, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 44. 1897.

Carboniferous. Virginia and West Virginia. Part. syns. No. xi, Greenbrier shale Rogers.

**Procamelus** beds, Cope. U. S. Geol. and Geog. Surv. of Terr., vol. v, pp. 51-52. 1879.

Tertiary. Included in Loup Fork.

**Proctor** limestone, Keyes. Mo. Geol. Surv., vol. vi, p. 331. 1894.

Cambrian. Missouri. Included in Gasconade limestone, Ozark series.

**Productal** limestone, Owen. Geol. Recon. State of Indiana, Rept. in 1837, p. 22. 1859.

Indiana. Included in Subcarboniferous limestone.

**Productive** coal measures, Upper and Lower, Rogers. Geol. of Pa., vol. 1, p. 109. 1856.

Carboniferous. Pennsylvania. Included in Seral series.

Productive measures, Upper, Stevenson. 2d Pa. Geol. Surv., Rept. K, pp. 57-74, 84-88. 1876.

Carboniferous. Pennsylvania. Includes Waynesburg sandstone, Great limestone, Fishpot limestone, and Pittsburg sandstone.

Productive series, Upper, Stevenson. 2d Pa. Geol. Surv., Rept. K<sup>2</sup>, pp. 30-63. 1877.

Carboniferous. Pennsylvania. Includes Waynesburg sandstone and limestone, Great limestone, Fishpot limestone, and Redstone limestone.

Productive series, Lower, Stevenson. 2d Pa. Geol. Surv., Rept. K<sup>2</sup>, pp. 73-90. 1877.

Carboniferous. Pennsylvania and West Virginia. Includes Mahoning sandstone, Freeport limestone, and Piedmont sandstone (= Tionesta).

Productive series, Lower, White. 2d Pa. Geol. Surv., Rept. Q<sup>2</sup>, pp. 27-51. 1877.

Carboniferous. Pennsylvania. Includes Freeport or Butler sandstone and limestone, Kittanning sandstone, and Ferriferous limestone.

Productive measures, Lower, Ashburner. 2d Pa. Geol. Surv., Rept. F, pp. 184-191. 1878.

Carboniferous. Pennsylvania. Exact syn. Allegheny River series.

Productive series, Upper, White. 2d Pa. Geol. Surv., Rept. Q, pp. 21-22. 1878.

Carboniferous. Pennsylvania.

Productive series, Lower, White. 2d Pa. Geol. Surv., Rept. Q, pp. 39-64. 1878.

Carboniferous. Pennsylvania. Includes Freeport limestone, Butler sandstone and limestone, Kittanning sandstone, and Ferriferous limestone.

Productive series, Upper, Stevenson. 2d Pa. Geol. Surv., Rept. K<sup>3</sup>, pp. 14-17. 1878.

Carboniferous. Pennsylvania.



- Productive series, Lower, Stevenson. 2d Pa. Geol. Surv., Rept. K<sup>3</sup>, pp. 27-43. 1878.  
Carboniferous. Pennsylvania. Includes Mahoning sandstone, Freeport limestone and sandstone, Kittanning limestone, Bolivar sandstone, and Clarion sandstone.
- Productive measures, Upper, Platt. 2d Pa. Geol. Surv., Rept. II<sup>4</sup>, pp. 155-165. 1878.  
Carboniferous. Pennsylvania.
- Productive measures, Lower, Platt. 2d Pa. Geol. Surv., Rept. II<sup>4</sup>, pp. 175-231. 1878.  
Carboniferous. Pennsylvania.
- Productive measures, Lower, Chance. 2d Pa. Geol. Surv., Rept. V, pp. 15-29. 1879.  
Carboniferous. Pennsylvania. Includes Freeport group, Mahoning sandstone, Kittanning group, and Ferriferous limestone.
- Productive measures, Lower, White. 2d Pa. Geol. Surv., Rept. Q<sup>3</sup>, pp. 22-32. 1880.  
Carboniferous. Pennsylvania. Includes Ferriferous limestone.
- Productive measures, Lower, Ashburner. 2d Pa. Geol. Surv., Rept. R, pp. 45-48. 1880.  
Carboniferous. Pennsylvania.
- Productive measures, Lower, Chance. 2d Pa. Geol. Surv., Rept. V<sup>2</sup>, pp. 31-56. 1880.  
Carboniferous. Pennsylvania. Includes Freeport group, Kittanning group, Johnstown cement limestone, Clarion group, and Ferriferous limestone.
- Productive measures, Upper, Platt. 2d Pa. Geol. Surv., Rept. II<sup>5</sup>, pp. 43-291. 1880.  
Carboniferous. Pennsylvania.
- Productive measures, Lower, Platt. 2d Pa. Geol. Surv., Rept. II<sup>5</sup>, p. 313. 1880.  
Carboniferous. Pennsylvania.
- Productive measures, Lower, Chance. 2d Pa. Geol. Surv., Rept. II<sup>7</sup>, pp. 25-80. 1884.  
Carboniferous. Pennsylvania.
- Productive measures, Lower, Ashburner. 2d Pa. Geol. Surv., Rept. R<sup>2</sup>, p. 393. 1885.  
Carboniferous. Pennsylvania.
- Productive measures, Upper, D'Invilliers. 2d Pa. Geol. Surv., Ann. Rept., 1885, pp. 171-177. 1886.  
Carboniferous. Pennsylvania.
- Productive measures, Lower, Platt. 2d Pa. Geol. Surv., Rept. II<sup>6</sup>, pp. xxix-xxxii. 1887.  
Carboniferous. Pennsylvania. Included in Freeport group, Kittanning group, and Clarion group.
- Productive measures, Upper, D'Invilliers. 2d Pa. Geol. Surv., Ann. Rept., 1886, pp. 63-74, 206-208, 264-265, 291-295, 336-341. 1887.  
Carboniferous. Pennsylvania. Exact syn. Monongahela River series.
- Productive measures, Lower, D'Invilliers. 2d Pa. Geol. Surv., Ann. Rept., 1886, pp. 79-81. 1887.  
Carboniferous. Pennsylvania. Exact syn. Allegheny River series.
- Productive measures, Upper, Carll. 2d Pa. Geol. Surv., Rept. I<sup>5</sup>, pp. 122-123. 1890.  
Carboniferous. Pennsylvania. Exact syn. Monongahela series.
- Productive measures, Lower, Carll. 2d Pa. Geol. Surv., Rept. I<sup>5</sup>, pp. 125-126. 1890.  
Carboniferous. Pennsylvania. Exact syn. Allegheny series.
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Carboniferous. Alabama. Included in Coal Measures.
- Productive series, Upper, D'Invilliers. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. ii, pp. 2448-2564. 1895.  
Carboniferous. Pennsylvania. Exact syns. No. xv, Monongahela River series.
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Carboniferous. Pennsylvania. Exact syns. No. xiii, Allegheny River series.

- Prospect** Mountain limestone and quartzite, Hague. U. S. Geol. Surv., 3d Ann Rept., pp. 253, 254. 1883.  
Cambrian. Nevada.
- Prospect**, Walcott. U. S. Geol. Surv., Bull. No. 81, pp. 252, 313. 1891.  
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- Prospect** Mountain limestone, Hague. U. S. Geol. Surv., Mon., vol. xx, p. 36. 1892.  
Cambrian. Nevada.
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Cambrian. Nevada.
- Proteau** group, Vanuxem. N. Y. Geol. Surv., 4th Ann. Rept., pp. 374-375. 1840.  
Silurian. New York.
- Proteau** group, Hall. Am. Jour. Sci., 1st ser., vol. xlii, p. 60. 1842.  
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- Protoceras** beds, Wortman. Am. Mus. Nat. Hist., Bull., vol. v, 1893, pp. 101-102. 1893.  
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- Protoceras**, Wortman. Am. Mus. Nat. Hist., Bull., vol. v, pp. 96, 101. 1893.  
Tertiary. Included in White River or Lower Miocene.
- Pteranodon** beds, Marsh. U. S. Geol. Surv., Mon., vol. xxvii, p. 476. 1896.  
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Cretaceous. Kansas and Nebraska. Included in Niobrara. Exact syns. Apishapa and Upper Timber beds.
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Algonkian. Minnesota.
- Puckwunge** conglomerate, Winchell. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iv, pp. 13, 517. 1899.  
Cambrian. Minnesota. Included in Keweenawan.
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Cambrian. Minnesota.
- Puerco** marl, Cope. Rept. of Secy. of War to 44th Cong., vol. ii, pt. ii, p. 1012. 1875.  
Tertiary. New Mexico. Included in Eocene.
- Puerco** marl, Holmes. U. S. Geol. and Geog. Surv. of Terr., 9th Ann. Rept., p. 248. 1877.  
Cretaceous. Colorado. Exact syn. Bad Land group.
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- Puerco** beds, Dall. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 347. 1898.  
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Tertiary. Washington. Included in Eocene. Exact syn. Tejon (?).
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- Quadrant formation, Iddings and Weed. U. S. Geol. Surv., Mon., vol. xxxii, pt. ii, pp. 1-59, 149-164. 1899.  
Carboniferous. Yellowstone Park.
- Quadrant group, Weed. U. S. Geol. Surv., 20th Ann. Rept., pt. iii, pp. 294-298. 1900.  
Carboniferous. Montana. Includes Kibbey sandstone and Otter shale.
- Quakertown** shale, White. 2d Pa. Geol. Surv., Rept. Q<sup>2</sup>, p. 66. 1877.  
Carboniferous. Pennsylvania. Included in No. 12, or Pottsville.
- Quakertown coal group, Platt. 2d Pa. Geol. Surv., Rept. H<sup>5</sup>, p. 326. 1880.  
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- Quakertown coal and sandstone, Orton. Ohio Geol. Surv., vol. vii, pp. 59, 60. 1893.  
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- Quarry Creek** limestone, Worthen. Ill. Geol. Surv., vol. vi, pp. 10-11, 12-17. 1875.  
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- Silurian. New Brunswick. Included in Lower Silurian.
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- Quebec, St. John. U. S. Geol. and Geog. Surv. of Terr., 11th Ann. Rept., p. 481. 1879.
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- Cambro-Silurian. Canada. Included in Lower Ordovician.



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- Quitman-Muerto** series, Hill. Geol. Soc. Am., Bull., vol. iii, p. 97. 1892.
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- Raccoon** shales, Hicks. Am. Jour. Sci., 3d ser., vol. xvi, pp. 216-219. 1878.
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- Rome sandstone, Walcott. U. S. Geol. Surv., Bull. No. 81, p. 247. 1891.
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- Rome sandstone, Hayes. Ala. Geol. Surv., Bull. No. 4, pp. 34, 37. 1892.
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- Rome formation, Hayes. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 2, 4, 6, 20. 1894-5.
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- Rome, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 16, 25, 27. 1895, 1896.
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- Rome formation, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 33. 1896.
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- Rossville** shales and sandstone, Beede. Kan. Acad. Sci., Trans., vol. xv, p. 31. 1898.  
Carboniferous. Kansas.
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Missouri.
- Roubidoux sandstone, Keyes. Mo. Geol. Surv., vol. iv, p. 30. 1894.  
Lower Silurian. Missouri. Included in Calciferous stage.
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Carboniferous. Texas. Included in Strawn division.
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Silurian. Massachusetts. Included in Lower Silurian.
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Silurian. Massachusetts.
- Roxbury** conglomerate, Crosby. Rept. on Geol. Map of Mass., p. 41. 1876.  
Paleozoic. Massachusetts. Included in Carboniferous(?).
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Cretaceous. Colorado.
- Rushville** group, Andrews. Am. Jour. Sci., 3d ser., vol. xviii, p. 137. 1879.  
Carboniferous. Ohio.
- Russell**, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 12, 26. 1894, 1896.  
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- Russell formation, Cragin. Colo. Coll. Stud., vol. vi, p. 49. 1896.  
Cretaceous. Kansas. Included in Benton. Includes Downs limestone or Fence-post limestone and Lincoln marble.
- Russell formation, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 44. 1897.  
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Silurian. Massachusetts. Included in Chester amphibolites.
- Russell group, Adams. Kan. Univ. Geol. Surv., vol. iv, pp. 25-26. 1898.  
Upper Cretaceous. Kansas. Included in Benton.
- Russell formation, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 59. 1899.  
Cambrian. Virginia and Tennessee.
- Russellville** shale, Stevenson. N. Y. Acad. Sci., Trans., vol. xv, p. 51. 1896.  
Carboniferous. Arkansas. Included in Appleton shale.
- Rutledge** limestone, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 12. 1894.  
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- Rutledge limestone, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 16, 25, 27. 1895, 1896.  
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- Rutledge limestone, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 59. 1899.  
Cambrian. Virginia and Tennessee.

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- Sabine river beds**, Dumble. Texas Geol. Surv., 2d Ann. Rept., pp. 25-57. 1891.  
Tertiary. Texas. Included in Eocene. Exact syn. Timber belt beds.
- Sac limestone**, Shepard. Mo. Geol. Surv., vol. xii, pp. 49, 74-77. 1898.  
Devonian. Missouri. Included in Hamilton stage.
- Saccharoidal sandstone**, Shumard. Mo. Geol. Surv., 1st and 2d Ann. Repts, pt. ii, p. 160. 1855.  
Silurian. Missouri. Included in Lower Silurian.
- Saccharoidal sandstone**, Swallow. Mo. Geol. Surv., 1st and 2d Ann. Repts., pp. 117, 197. 1855.  
Silurian. Missouri. Included in Lower Silurian.
- Saccharoidal sandstone**, Meek. Mo. Geol. Surv., 1st and 2d Ann. Repts., pt. ii, p. 105. 1855.  
Silurian. Missouri. Included in Lower Silurian.
- Saccharoid sandstone**, Shumard. Mo. Geol. Surv., Rept., 1855-1871, pp. 191, 207, 215, 234, 245, 268, 284, 298, 308. 1873.  
Silurian. Missouri. Included in Lower Silurian and Calciferous sand rock.
- Saccharoidal sandstone**, Broadhead. Mo. Geol. Surv., Rept., 1855-1871, pp. 10, 26, 54. 1873.  
Silurian. Missouri. Included in Lower Silurian and Calciferous sand rock.
- Saccharoidal sandstone**, Meek. Mo. Geol. Surv., Rept., 1855-1871, pp. 118, 142. 1873.  
Silurian. Missouri. Included in Lower Silurian.
- Saccharoidal sandstone**, Broadhead. Mo. Geol. Surv., Rept., 1873-74, pp. 29. 1874.  
Lower Silurian. Missouri. Included in Magnesian limestone series.
- Saccharoidal sandstone**, Ladd. Mo. Geol. Surv., Bull. No. 3, pp. 14, 15. 1890.  
Lower Silurian. Missouri.
- Saccharoidal sandstone**, Simonds and Hopkins. Ark. Geol. Surv., 1891, vol. ii, pp. 30-33. 1891.  
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Carboniferous. Rhode Island.
- Sacramento formation**, Smith. Jour. of Geol., vol. ii, pp. 591-593. 1894.  
Devonian. California. Includes Kennett limestones and shales.
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Carboniferous. Texas. Included in Cisco division.
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Juratrias. California.
- Sailor Canyon formation**, Lindgren. U. S. Geol., Surv., Geol. Atlas of U. S., Folio No. 39. 1897.  
Juratrias. California. Included in Bed Rock series.
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Juratrias. California. Included in Bed Rock series.
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Vermont and Canada. Included in Upper Taconic of Marcou.
- St. Anthony sandstone**, Hopkins. Indiana Dept. Geol. and Nat. Res., 20th Ann. Rept., 1895, p. 312. 1896.  
Indiana.
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Silurian. Arkansas.

- St. Clair limestone, Penrose. Ark. Geol. Surv., 1890, vol. i, pp. 124-128, 166-184. 1890.  
Silurian. Arkansas.
- St. Clair shales, Lane. Mich. Geol. Surv., Rept. State Board, 1891, 1892, p. 66. 1893.  
Devonian. Michigan.
- St. Clair limestone, Williams. Am. Jour. Sci., 3d ser., vol. xlvii, pp. 326-329. 1894.  
Silurian. Arkansas. Included in Ordovician.
- St. Clair shales, Lane. Mich. Geol. Surv., vol. v, pt. ii, p. 21. 1895.  
Michigan.
- St. Clair shales, Lane. U. S. Geol. Surv., Water-Supply Papers, No. 30, pl. vi. 1899.  
Carboniferous. Michigan. Part. syns. Ohio and Black shale.
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Devonian. Michigan. Exact syn. Genesee.
- St. Clair limestone, Williams. Ark. Geol. Surv., 1892, vol. v, pp. 281-301. 1900.  
Silurian. Arkansas. Included in Niagara.
- St. Croix sandstone, Winchell.** Minn. Geol. and Nat. Hist. Surv., 1st Ann. Rept., 1872, pp. 68-80. 1873.  
Lower Silurian. Minnesota.
- St. Croix sandstone, Winchell.** Minn. Geol. and Nat. Hist. Surv., 4th Ann. Rept., p. 31. 1876.  
Lower Silurian. Minnesota.
- St. Croix sandstone, Winchell.** Minn. Geol. and Nat. Hist. Surv., 5th Ann. Rept., pp. 29-34. 1877.  
Lower Silurian. Minnesota.
- St. Croix sandstone, Upham.** Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. i, p. 424. 1884.  
Minnesota.
- St. Croix sandstone, Winchell.** Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. i, pp. 223, 257, 281. 1884.  
Minnesota.
- St. Croix formation, Winchell.** Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. ii, pp. xxi, 13, 31. 1888.  
Minnesota. Includes Jordan sandstone, St. Lawrence limestone + certain sands and sandy shales.
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Minnesota.
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Cambrian. Minnesota. Included in St. Croix formation as middle member.  
Part. syn. 4th Magnesian limestone of Missonri.
- St. Croix sandstones, Hall.** Minn. Acad. Nat. Sci., Bull., vol. iii, No. 1, p. 134. 1889.  
Cambrian. Minnesota. Included in St. Croix formation as lowest of three members.
- St. Croix, Walcott.** U. S. Geol. Surv., Bull. No. 81, pp. 245, 330. 1891.  
Cambrian. Mississippi Valley.
- St. Croix sandstone, Keyes.** Iowa Geol. Surv., 1st Ann. Rept., vol. i, pp. 20-21. 1893.  
Cambrian. Iowa. Included in Upper Cambrian. Exact syn. Potsdam.
- St. Croix sandstone, Calvin.** Iowa Geol. Surv., vol. iv, pp. 54-61. 1895.  
Cambrian. Iowa. Included in Potsdam series.
- St. Croix sandstone, Norton.** Iowa Geol. Surv., vol. iii, pp. 184-186. 1895.  
Cambrian. Iowa.

**St. Elias** schist, Russell. Nat. Geog. Mag., vol. iii, pp. 167, 173-174. 1891.  
Alaska.

**St. Elias** schist, Upham. Geol. Soc. Am., Bull., vol. iv, p. 190. 1893.  
Pleistocene (?). Alaska.

**St. Francois** limestone, Keyes. Mo. Geol. Surv., vol. vi, pp. 331, 349, 352. 1894.  
Cambrian. Missouri. Included in Ozark series. Includes Potosi limestone and  
St. Joseph limestone.

**St. Francois**, Keyes. Mo. Geol. Surv., vol. vii, pt. ii, p. 649. 1894.  
Lower Silurian. Missouri.

**St. Genevieve** limestone, Shumard. St. Louis Acad. Sci., Trans., vol. i, p. 406  
1857.

Lower Carboniferous. Missouri. Included in Mountain limestone.

**St. Genevieve** limestone, Shumard. Mo. Geol. Surv., Rept., 1855-1871, p. 293. 1873.  
Carboniferous. Missouri. Included in Lower Carboniferous.

**St. Genevieve**, Keyes. Geol. Soc. Am., Bull., vol. iii, pp. 284, 287. 1892.  
Lower Carboniferous. Missouri.

**St. Genevieve** limestone, Keyes. Mo. Geol. Surv., vol. iv, pp. 30, 76. 1894.  
Lower Carboniferous. Missouri. Included in St. Louis stage.

**St. Genevieve** limestone, Keyes. Mo. Geol. Surv., vol. vii, pt. ii, p. 390. 1894.  
Lower Carboniferous. Missouri. Included in St. Louis stage.

**St. Joe** marble, Hopkins. Ark. Geol. Surv., 1890, vol. iv, pp. 252-350. 1890.  
Carboniferous. Arkansas. Included in Lower Carboniferous.

**St. Joe** limestone, Gallager. Mo. Geol. Surv., Bien. Rept., p. 52. 1898.  
Upper Carboniferous. Missouri. Included in Upper Coal Measures.

**St. Johns** slate, Jukes. General Rept. on Geol. of Newfoundland, p. 51 et seq.  
1843.

Cambrian (?). Newfoundland.

**St. John** shales, Dawson. Am. Jour. Sci., 2d ser., vol. xxxv, pp. 314-319. 1863.  
Devonian. Canada. Included in St. John group or series.

**St. John** group, Dawson. Am. Jour. Sci., 2d ser., vol. xxxv, pp. 314-319. 1863.  
Devonian. Canada. Includes St. John shales.

**St. John** group, Matthew. Can. Nat., vol. viii, pp. 244, 247-251. 1863.  
Cambrian. New Brunswick.

**St. John** series, Dawson. Regents Univ. of N. Y., 16th Ann. Rept., pp. 97-109;  
Quart. Jour. Geol. Soc., vol. xviii, p. 296. 1863.

Devonian or Upper Silurian. New Brunswick. Included in Middle and Lower  
Devonian, Upper Silurian. Includes Catskill, Chemung, Portage, Genesee,  
Hamilton, Corniferous, Oriskany and Schoharie.

**St. Jean (John)** group, Bailey and Matthew. Can. Geol. Surv., Rept. 1870-71, pp. 138-  
148. 1873.

Lower Silurian. New Brunswick. Exact syn. Acadian group.

**St. John** group, Matthew. Can. Geol. Surv., Rept. 1876-77, p. 342. 1878.  
New Brunswick.

**St. John** group, Bailey. Can. Geol. Surv., Rept. 1877-78, p. 281<sup>2</sup>. 1879.

Cambrian. New Brunswick. Included in Primordial Silurian. Exact syn.  
Acadian group.

**St. John** group, Miller. Cin. Soc. Nat. Hist., Jour., vol. iv, No. 4, p. 271. 1881.

**St. John** group, Matthew. Can. Roy. Soc., Proc. and Trans., vol. i, sec. iv, pp. 87-108,  
271-279; vol. ii, sec. iv, pp. 99-124; vol. iii, sec. iv, pp. 29-84; vol. v, sec. iv,  
pp. 115-166; vol. viii, sec. iv, pp. 123-166; vol. ix, sec. iv, pp. 95-110; vol. xi, sec.  
iv, pp. 85-130. 1883-1893.

Cambrian. New Brunswick.

**St. John** group, Matthew. N. B. Nat. Hist. Soc. Bull., vol. i, 1882-86, pp. 97-102.  
1885.

Cambrian. New Brunswick.



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Cambrian. New Brunswick.
- St. John group, Matthew. Can. Roy. Soc., Proc. and Trans., vol. vii, sec. iv, pp. 123-129. 1890.  
Cambrian. New Brunswick.
- St. John, Walcott. U. S. Geol. Surv., Bull. No. 81, pp. 248, 264. 1891.  
Cambrian. Newfoundland.
- St. John group, Matthew. Can. Roy. Soc., Trans., new ser., vol. iii, sec. iv, pp. 165-211. 1897.  
Cambrian. New Brunswick.
- St. John group, Matthew. Can. Roy. Soc., Trans., new ser., vol. iv, sec. iv, p. 123. 1898.  
Cambrian. New Brunswick.
- St. John group, Walcott. Wash. Acad. Sci., Proc., vol. i, p. 324. 1900.  
Cambrian. Newfoundland.
- St. Joseph** limestone, Keyes. Mo. Geol. Surv., vol. vi, p. 331. 1894.  
Cambrian. Missouri. Included in St. Francois limestone, Ozark series. Part. syn. Osage limestone, Cole Camp limestone.
- St. Joseph limestone, Winslow. U. S. Geol. Surv., Bull. No. 132, p. 14. 1896.  
Missouri.
- St. Lawrence** limestone, Winchell. Minn. Geol. and Nat. Hist. Surv., 2d Ann. Rept., pp. 152-155. 1874.  
Lower Silurian. Minnesota.
- St. Lawrence limestone, Winchell. Minn. Geol. and Nat. Hist. Surv., 4th Ann. Rept., pp. 32-34. 1876.  
Lower Silurian. Minnesota. Included in Lower Magnesian as lowest portion.
- St. Lawrence limestone, Winchell. Minn. Geol. and Nat. Hist. Surv., 5th Ann. Rept., p. 29. 1877.  
Lower Silurian. Minnesota.
- St. Lawrence, Upham. Minn. Geol. and Nat. Hist. Surv. 8th Ann. Rept., p. 103. 1880.  
Lower Silurian. Minnesota.
- St. Lawrence limestone, Winchell. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. i, pp. 222, 253, 282. 1884.  
Minnesota.
- St. Lawrence limestone, Harrington. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. i, p. 334. 1884.  
Cambrian. Minnesota.
- St. Lawrence limestone, Upham. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. i, p. 424. 1884.  
Minnesota.
- St. Lawrence, Winchell. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. ii, pp. 70, 381. 1888.  
Cambrian. Minnesota.
- St. Lawrence limestone, Upham. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. ii, pp. 119, 160. 1888.  
Cambrian. Minnesota.
- St. Lawrence limestone, Winchell. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. ii, p. xxii. 1888.  
Minnesota. Included in St. Croix. Exact syn. Mendota limestone of Wisconsin Survey.
- St. Lawrence formation, Hall. Minn. Acad. Nat. Sci., Bull., vol. iii, No. 1, p. 134. 1889.  
Cambrian. Minnesota. Exact syn. Mendota limestone of Irving.

- St. Lawrence formation, Hopkins. Ark. Geol. Surv., 1890, vol. iv., p. 50. 1890.  
Cambrian. Arkansas.
- St. Lawrence limestone, Hall and Sardeson. Geol. Soc. Am., Bull., vol. iii, p. 341. 1892.  
Ordovician. Minnesota. Included in Magnesian series.
- St. Lawrence limestone, Keyes. Iowa Geol. Surv., vol. i, p. 23. 1893.  
Cambrian. Iowa. Included in St. Croix sandstone. Exact syn. Mendota limestone.
- St. Lawrence stage, Upham. Am. Geol., vol. xvi, p. 106. 1895.  
Pleistocene. Included in Champlain epoch.
- St. Lawrence, Hall and Sardeson. Geol. Soc. Am., Bull., vol. vi, pp. 167, 172. 1895.  
Cambrian(?). Minnesota. Included in Magnesian series.
- St. Louis** limestone, Englemann. Am. Jour. Sci., 2d ser., vol. iii, pp. 119-120. 1847.  
Lower Carboniferous. Illinois. Included in Mountain limestone.
- St. Louis limestone, Swallow. Mo. Geol. Surv., 1st and 2d Ann. Repts., pp. 93, 174. 1855.  
Carboniferous. Missouri. Included in Mountain or Lower Carboniferous limestone.
- St. Louis limestone, Shumard. Mo. Geol. Surv., 1st and 2d Ann. Repts., pt. ii, pp. 139, 170, 181. 1855.  
Carboniferous. Missouri.
- St. Louis, Hall. Am. Assoc. Adv. Sci., Proc., vol. x, p. 56. 1856.  
Carboniferous. Mississippi Valley. Exact syn. Concretionary limestone.
- St. Louis limestone, Shumard. St. Louis Acad. Sci., Trans., vol. i, p. 407. 1857.  
Lower Carboniferous. Missouri. Included in Mountain limestone.
- St. Louis limestone, Hall. Iowa Geol. Surv., vol. i, pt. i, pp. 98-100. 1858.  
Carboniferous. Iowa. Exact syn. Concretionary limestone.
- St. Louis limestone, Hall. Albany Inst., Trans., vol. iv, pp. 2-3. 1864.  
Carboniferous. Mississippi Valley. Exact syn. Concretionary limestone.
- St. Louis group, Worthen. Ill. Geol. Surv., vol. i, pp. 41-43, 83-89. 1866.  
Carboniferous. Illinois. Includes Warsaw limestone.
- St. Louis limestone, Worthen. Ill. Geol. Surv., vol. i, pp. 292, 321, 333-334, 352, 353-354. 1866.  
Carboniferous. Illinois.
- St. Louis group, Engelmann. Ill. Geol. Surv., vol. i, pp. 378-381, 413-414, 435-438, 459. 1866.  
Carboniferous. Illinois.
- St. Louis, limestone, Engelmann. St. Louis Acad. Sci., Trans., vol. ii, p. 189. 1868.  
Lower Carboniferous. Illinois.
- St. Louis limestone, White. Am. Jour. Sci., 2d ser., vol. xlv, p. 333. 1868.  
Carboniferous. Iowa.
- St. Louis limestone, Worthen. Ill. Geol. Surv., vol. iii, pp. 42-44, 64-65, 111-112, 127-128, 138-140. 1868.  
Carboniferous. Illinois.
- St. Louis group, Worthen. Ill. Geol. Surv., vol. iv, pp. 15, 32, 51, 68, 84, 103. 1870.  
Carboniferous. Illinois.
- St. Louis limestone, White. Iowa Geol. Surv., vol. i, pp. 215-222, 225-230. 1870.  
Carboniferous. Iowa. Included in Subcarboniferous. Exact syn. concretionary limestone. Part. syn. Warsaw limestone.
- St. Louis limestone, Shumard. Mo. Geol. Surv., Rept., 1855-1871, pp. 293, 320. 1873.  
Carboniferous. Missouri. Included in Lower Carboniferous.
- St. Louis limestone, Worthen. Ill. Geol. Surv., vol. v, pp. 260, 274-277. 1873.  
Carboniferous. Illinois.

- St. Louis limestone, Broadhead. Mo. Geol. Surv., Rept., 1873-1874, pp. 24, 184. 1874.  
Carboniferous. Missouri. Included in Lower Carboniferous Mountain limestone.
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- Santee** beds, Pratt. Ashley River phosphates. 1868.  
Tertiary. South Carolina. Included in Eocene.
- Santee** beds, Shaler. Boston Soc. Nat. Hist., Proc., vol. xiii, 1869-71, p. 229. 1870.  
South Carolina.
- Santee** River beds, Holmes. Phosphate Rock of S. C. 1878.  
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- Santee** beds, Clark. U. S. Geol. Surv., Bull. No. 83, p. 52. 1891.  
Tertiary. South Carolina. Included in Eocene. Includes Ashley and Cooper beds.
- Santee** beds, Dall. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 342. 1898.  
Tertiary. South Carolina. Included in Jacksonian stage, Eocene.
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Pliocene(?). Canada.
- Saskatchewan**, Upham. Geol. Soc. Am., Bull., vol. v, pp. 87, 89. 1894.  
Tertiary. Minnesota.
- Saskatchewan** gravels, Dawson. Jour. of Geol., vol. iii, pp. 507-511. 1895.  
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- Saskatchewan**, Dawson. Geol. Soc. Am., Bull., vol. vii, p. 40. 1895.  
Pleistocene. Alberta. Exact syn. Lafayette(?).
- Sassafras** River greensand, McGee. U. S. Geol. Surv., 7th Ann. Rept., p. 612. 1888.  
Cretaceous. Maryland.
- Saugeen** clay, Logan. Can. Geol. Surv., Rept., 1843-63, pp. 887, 896-907. 1863.  
Canada. Included in Drift (Upper stratified portion).
- Saugeen**, Spencer. Wash. Phil. Soc., Bull., vol. xi, 1891, p. 506. 1892.  
Pleistocene. Ontario, Canada.



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Canada.
- Savage**, Darton and Taff. U. S. Geol. Surv., Geol. Atlas U. S., Folio No. 28. 1896.  
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- Savage, Clark. Md. Geol. Surv., vol. i, p. 156. 1897.  
Carboniferous. Maryland. Included in Coal Measures.
- Savage formation, Clark. Md. Geol. Surv., vol. i, p. 186. 1897.  
Carboniferous. Maryland.
- Savanna** sandstone, Taff. U. S. Geol. Surv., 19th Ann. Rept., pt. iii, p. 437. 1899.  
Carboniferous. Indian Territory. Included in Coal Measures.
- Savanna formation, Taff and Adams. U. S. Geol. Surv., 21st Ann. Rept., pt. ii, p. 276. 1900.  
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- Savoy** schist, Emerson. U. S. Geol. Surv., Geol. Atlas of U. S., Hawley sheet. 1892.  
Silurian. Massachusetts.
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- Savoy schist, Emerson. U. S. Geol. Surv., Mon., vol. xxix, pp. 156-163. 1898.  
Silurian. Massachusetts. Included in Lower Silurian.
- Sawatch** quartzite, Eldridge. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 9. 1894.  
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- Sawatch quartzite, Emmons. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 48. 1898.  
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Tertiary. Canada. Included in Pliocene.
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Post-Pliocene. Canada.
- Saxicava sand, Matthew. Can. Geol. Surv., Rept., 1877-78, p. 31EE. 1879.  
Quaternary. New Brunswick.
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Pleistocene. New Brunswick, Nova Scotia.
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Silurian. Pennsylvania. Includes Onondaga and Waterline.
- Schoharie** grit, Hall. Geol. of N. Y., pt. iv, 4th Geol. Dist., pp. 18, 151. 1843.  
Paleozoic. New York. Included in New York system. Includes Grit shale.
- Schoharie grit, Mather. Geol. of N. Y., pt. i, p. 340. 1843.  
Paleozoic. New York. Included in Helderberg division.
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New York. Included in Helderberg division of the New York system.
- Schoharie grit, Emmons. Agric. of N. Y., vol. i, p. 174. 1846.  
New York. Included in Helderberg division of New York system.
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Devonian. Canada.
- Schoharie grit, Newberry. Ohio Geol. Surv., vol. i, pt. i, p. 67. 1873.  
Devonian. Ohio.
- Schoharie, Claypole. Am. Phil. Soc., Proc., vol. xx, p. 534. 1883.  
Devonian. Pennsylvania.

Schoharie grit, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, p. 1040 et seq. 1892.

Devonian. Pennsylvania. Included in Oriskany.

Schoharie grit, Darton. Geol. Soc. Am., Bull., vol. iv, p. 437. 1893.

Silurian. New York.

Schoharie grit, Darton. N. Y. State Geol., 13th Ann. Rept., pp. 208-209, 243-244. 1894.

Devonian. New York.

**Schooner Head** series, Shaler. U. S. Geol. Surv., 8th Ann. Rept., pt. ii, p. 1041. 1889.

Maine.

**Schreyfogels** limestone, Platt. 2d Pa. Geol. Surv., Rept. G<sup>2</sup>, p. 187. 1880.

Carboniferous. Pennsylvania.

**Scioto** slates and shales, Owen. Rept. Geol. Reconm. State of Indiana, 1838, pt. ii, p. 59. 1859.

Ohio. Exact syn. black slate at base of knobs in Indiana.

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Carboniferous. Tennessee. Part syn. Walden sandstone.

Scott shale, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 40. 1897.

Carboniferous. Tennessee.

**Scotts Creek** flint, Orton. Rev. of Strat. Geol. of eastern Ohio, p. 22. 1880.

Carboniferous. Ohio. Exact syn. Logan flint.

**Scutella** limestone, Owen. Am. Jour. Sci., 2d ser., vol. i, p. 50. 1846.

Silurian. New York. Included in Catskill shaly limestone.

**Sea Urchin** limestone, Bennett. Kan. Univ. Geol. Surv., vol. i, p. 64. 1896.

Carboniferous. Kansas.

**Sebastian** stage, Stevenson. N. Y. Acad. Sci., Trans., vol. xv, p. 51. 1896.

Carboniferous. Arkansas. Includes Greenwood sandstone, Tomlinson shale, Hartwell sandstone, Belva shale, and Ozark sandstone.

**Secret Cañon** shale, Hague. U. S. Geol. Surv., 3d Ann. Rept., pp. 253, 255. 1883.

Cambrian. Nevada.

Secret Cañon, Walcott. U. S. Geol. Surv., Bull. No. 81, pp. 246, 315. 1891.

Cambrian. Nevada. Included in Middle Cambrian.

Secret Cañon shale, Hague. U. S. Geol. Surv., Mon., vol. xx, p. 39. 1892.

Cambrian. Nevada.

Secret Cañon shale, Walcott. U. S. Nat. Mus., Proc., vol. xxi, p. 413. 1898.

Cambrian. Vermont. Included in Middle Cambrian.

**Sedalia** limestone, Vogdes. St. Louis Acad. Sci., Trans., vol. v, p. 615. 1892.

Missouri.

**Selinsgrove**, White. 2d Pa. Geol. Surv., Rept. G<sup>2</sup>, p. 441. 1883.

Devonian. Pennsylvania.

Selinsgrove, sandstone, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, p. 1255 et seq. 1892.

Devonian. Pennsylvania. Included in No. VIIIc. Exact syn. Monteballo sandstone.

**Selkirk** series, Dawson. Geol. Soc. Am., Bull., vol. ii, pp. 165, 171. 1891.

Cambro-Silurian. British Columbia.

Selkirk series, Dawson. Can. Geol. Surv., new ser., vol. vii, pp. 30B, 32B-33B. 1896.

Cambrian. British Columbia. Part syn. Castle Mountain group.

Selkirk series, McConnell. Can. Geol. Surv., new ser., vol. x, p. 30A. 1898.

British Columbia.

**Sellersburg** beds, Kindle. Am. Pal., Bull. No. 12, pp. 8, 110. 1899.

Devonian. Indiana.

- Seneca** limestone, Hall. N. Y. Geol. Surv., 3d Ann. Rept., pp. 292-295, 310. 1839.  
Devonian(?). New York.
- Seneca** limestone, Vanuxem. N. Y. Geol. Surv., 3d Ann. Rept., pp. 275-278. 1839.  
Devonian? New York.
- Seneca** freestone, Owen. 30th Cong., 1st sess., Sen. Misc. No. 23, p. 39. 1848.  
Triassic. Maryland. Included in New Red sandstone.
- Seneca** limestone, Lincoln. N. Y. State Mus., 48th Ann. Rept., pt. ii, pp. 90-92. 1895.  
Devonian. New York.
- Senecan**, Clarke and Schuchert. Science, new ser., vol. x, pp. 876-877. 1899.  
Devonian. New York. Included Tully limestone, Genesee shale, Portage beds.
- Sequoian** formation, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 44. 1897.  
Carboniferous. Virginia and West Virginia. Part. syn. No. xiii, Lower Coal group, of Rogers.
- Seral** series, Rogers. Am. Jour. Sci., 1st ser., vol. xlvii, p. 156. 1844.
- Seral** conglomerate, Rogers. Geol. of Pa., vol. i, pp. 109, 146-148 et seq.; vol. ii, p. 758. 1858.  
Carboniferous. Pennsylvania. Includes Lower Coal Measures. Exact syn. Coal Measures.
- Seral** conglomerate, Rogers. Geol. of Pa., vol. ii, p. 16 et seq. 1858.  
Carboniferous. Pennsylvania.
- Sespe** brownstone formation, Watts. Cal. State Mg. Bur., Bull. 11, pp. 25-26, etc. 1897.  
Oligocene(?). California.
- Setters** quartz schist, Williams. U. S. Geol. Surv., Baltimore, Md., Geologis sheet. 1892.  
Maryland.
- Setters** Ridge quartzite, Mathews. Md. Geol. Surv., vol. ii, p. 213. 1898.  
Maryland.
- Severn**, Darton. Geol. Soc. Am., Bull., vol. ii, pp. 431, 438. 1891.  
Cretaceous. Virginia and Maryland.
- Severn**, McGee, Williams, Darton. Int. Cong. of Geol., 5th sess., pp. 237, 247-248. 1893.  
Tertiary. Maryland, District of Columbia and Virginia.
- Severn**, Williams and Clark. Maryland; Its Resources, Industries, and Institutions, pp. 75-77. 1893.  
Cretaceous. Maryland. Included in Upper Cretaceous.
- Severn**, Darton. U. S. Geol. Surv., Bull. No. 138, p. 125. 1896.  
Cretaceous. Atlantic Coastal Plain.
- Severy** shales, Haworth. Kan. Univ. Geol. Surv., vol. iii, p. 66. 1894.  
Carboniferous. Kansas.
- Sevier**, Campbell. Geol. Soc. Am., Bull., vol. v, pp. 171, 176. 1894.  
Silurian. Virginia. Included in Hudson River.
- Sevier** shale, Hayes. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 20. 1895.  
Silurian. Tennessee.
- Sevier** shale, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 12, 26. 1894, 1896.  
Silurian. Kentucky, Virginia and Tennessee.
- Sevier** shale, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 16, 25, 27. 1895, 1896.  
Silurian. Tennessee and North Carolina.
- Sevier** shale, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 44. 1897.  
Silurian. Virginia and West Virginia.

- Sevier shale, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 59. 1899.  
Silurian. Virginia and West Virginia.
- Sewanee** division, White. Geol. Soc. Am., Bull., vol. viii, p. 290. 1897.  
Upper Carboniferous. Tennessee. Included in Pottsville.
- Sewell**, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 26. 1896.  
Carboniferous. Virginia and West Virginia. Included in Coal-bearing strata, Pottsville series.
- Sewell formation, Campbell and Mendenhall. U. S. Geol. Surv., 17th Ann. Rept., pt. ii, p. 494. 1896.  
Carboniferous. West Virginia. Included in No. xii of Rogers, Conglomerate series of Fontaine.
- Sewell marls, Clark, Bagg and Shattuck. Geol. Soc. Am., Bull., vol. viii, pp. 316-338. 1897.  
Cretaceous. New Jersey. Included in Rancocas formation.
- Sewell marls, Clark, Bagg and Shattuck. N. J. Geol. Surv., Rept. 1897, p. 188. 1898.  
Cretaceous. New Jersey. Included in Rancocas formation.
- Sewell formation, White. U. S. Geol. Surv., 20th Ann. Rept., pt. ii, pp. 816-817. 1900.  
Carboniferous. Virginia and West Virginia.
- Sewickley** sandstone, White. U. S. Geol. Surv., Bull. No. 60, p. 65. 1891.  
Carboniferous. Pennsylvania. Included in Upper Coal Measures, Monongahela River series.
- Seymour** beds, Cummins. Texas Geol. Surv., 4th Ann. Rept., pp. 181-190. 1893.  
Pleistocene. Texas.
- Shadrick** mill sandstone, Drake. Texas Geol. Surv., 4th Ann. Rept., pp. 376-378. 1893.  
Carboniferous. Texas. Included in Strawn division.
- Shakopee** limestone, Winchell. Minn. Geol. and Nat. Hist. Surv., 2d Ann. Rept., pp. 138-147. 1874.  
Lower Silurian. Minnesota. Included in Lower Magnesian limestone.
- Shakopee sandstone, Winchell. Am. Jour. Sci., 3d ser., vol. ix, p. 443. 1875.  
Silurian. Minnesota. Part. syn. Lower Magnesian limestone on Mississippi Bluffs.
- Shakopee limestone, Winchell. Minn. Geol. and Nat. Hist. Surv., 4th Ann. Rept., p. 38. 1876.  
Lower Silurian. Minnesota. Included in Lower Magnesian limestone.
- Shakopee limestone, Winchell. Minn. Geol. and Nat. Hist. Surv., 5th Ann. Rept., p. 26. 1877.  
Lower Silurian. Minnesota. Part. syn. Chazy limestone.
- Shakopee limestone, Upham. Minn. Geol. and Nat. Hist. Surv., 8th Ann. Rept., p. 106. 1880.  
Lower Silurian. Minnesota.
- Shakopee limestone, Harrington. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. i, p. 336. 1884.  
Cambrian. Minnesota.
- Shakopee limestone, Winchell. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. i, pp. 219, 252, 285, 657. 1884.  
Minnesota.
- Shakopee limestone, Upham. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. i, pp. 429, 636. 1884.  
Minnesota.
- Shakopee limestone, Winchell. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. ii, pp. xvi-xxii, 10, 38, 73, 388. 1888.  
Minnesota.

- Shakopee formation, Hall. Minn. Acad. Nat. Sci., Bull., vol. iii, No. 1, p. 132. 1889.  
Cambrian. Minnesota.
- Shakopee formation, Hopkins. Ark. Geol. Surv., 1890, vol. iv, p. 50. 1890.  
Cambrian. Arkansas.
- Shakopee limestone, Chaney. Minn. Acad. Nat. Sci., vol. iii, 2d ser., pp. 280-284. 1891. Minnesota.
- Shakopee limestone, Hall and Sardeson. Geol. Soc. Am., Bull., vol. iii, p. 341. 1892.  
Ordovician (?). Minnesota. Included in Magnesian series.
- Shakopee dolomite, Hall and Sardeson. Geol. Soc. Am., Bull., vol. vi, pp. 167, 180. 1895.  
Cambrian. Minnesota. Included in Magnesian series.
- Shaly** limestone, Darton. N. Y. State Geol., 13th Ann. Rept., pp. 246, 303-304. 1894.  
Devonian. New York.
- Shark** River marl, Clark. N. J. State Geol., Ann. Rept. for 1892, pp. 208-210. 1893.  
Tertiary. New Jersey. Included in Eocene (?). Includes Blue marl.
- Shark River formation, Clark. Jour. of Geol., vol. ii, p. 167. 1894.  
Tertiary. New Jersey. Included in Eocene.
- Shark River, Clark. N. J. Geol. Surv., Rept. 1893, pp. 338-339. 1894.  
Eocene. New Jersey. Part. syn. Upper marl bed.
- Shark River, Darton. U. S. Geol. Surv., Bull. No. 138, p. 41. 1896.  
Cretaceous. New Jersey. Included in Eocene. Exact syn. Upper marl in part.
- Shark River formation, Clark, Bagg and Shattuck. Geol. Soc. Am., Bull., vol. viii, pp. 316, 341. 1897.  
Tertiary. New Jersey. Included in Eocene.
- Shark River formation, Clark, Bagg and Shattuck. N. J. Geol. Surv., Rept. 1897, pp. 192-193. 1898.  
Tertiary. New Jersey. Included in Eocene.
- Sharon** group, Rogers. Geol. of Pa., vol. ii, p. 489, et seq. 1858.  
Carboniferous. Pennsylvania. Included in Coal Measures.
- Sharon coal group, Stevenson. 2d Pa. Geol. Surv., Rept. K<sup>2</sup>, pp. 103-105. 1877.  
Carboniferous. Pennsylvania. Included in Lower Carboniferous.
- Sharon-Olean conglomerate, Carll. 2d Pa. Geol. Surv., Ann. Rept. 1886, pt. ii, pp. 636-639. 1887.  
Carboniferous. Pennsylvania.
- Sharon conglomerate, White. U. S. Geol. Surv., Bull. No. 65, p. 204. 1891.  
Carboniferous. Pennsylvania, Ohio. Included in Pottsville conglomerate series.  
Exact syns. Olean conglomerate, Garland conglomerate.
- Sharon conglomerate, Orton. Ohio Geol. Surv., vol. vii, pp. 36, 59, 60. 1893.  
Carboniferous. Ohio. Included in Conglomerate group.
- Sharpsville** sandstone, White. 2d Pa. Geol. Surv., Rept. Q<sup>3</sup>, pp. 61-62. 1880.  
Carboniferous. Pennsylvania. Included in Subconglomerate Measures.
- Sharpsville sandstone, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. i, p. 1761. 1895.  
Carboniferous. Pennsylvania. Included in No. x, Pocono.
- Shasta** group, Whitney. Cal. Geol. Surv., Pal., vol. ii, p. xiv. 1869.  
Cretaceous. California.
- Shasta group, Becker. Geol. Soc. Am., Bull., vol. ii, p. 201. 1891.  
Cretaceous. California.
- Shasta, White. U. S. Geol. Surv., Bull. No. 82, pp. 183, 255. 1891.  
Cretaceous. Pacific coast. Included in Lower Cretaceous.
- Shasta formation, Stanton. Geol. Soc. Am., Bull., vol. iv, p. 245. 1893.  
Cretaceous. California. Exact syn. Queen Charlotte formation.



**Shasta group**, Stanton. Jour. of Geol., vol. v, pp. 594-599. 1897.

Cretaceous. Included in Lower Cretaceous.

**Shasta-Chico series**, Diller. Geol. Soc. Am., Bull., vol. iv, p. 205. 1893.

Cretaceous. California.

**Shasta-Chico series**, Diller and Stanton. Geol. Soc. Am., Bull., vol. v, p. 436. 1894.

Jurassic. California and Oregon. Includes Chico, Horsetown, and Knoxville beds. Part. syns. Potomac and Comanche.

**Shawangunk grit**, Mather. N. Y. Geol. Surv., 4th Ann. Rept., pp. 246-255. 1840.

Silurian. New York.

**Shawangunk grit**, Mather. Geol. of N. Y., pt. i, pp. 355-365. 1843.

Paleozoic. New York. Included in Ontario division. Includes No. 4, Pennsylvania Surv.

**Shawangunk conglomerate**, Hall. Geol. of N. Y., pt. iv, 4th Geol. Dist., pp. 18, 31. 1843.

Paleozoic. New York. Included in New York system. Exact syn. Oneida conglomerate.

**Shawangunk grit**, Darton. N. Y. State Geol., 13th Ann. Rept., pp. 220-221, 308. 1894.

Silurian. New York.

**Shawnee limestone**, Orton. Ohio Geol. Surv., vol. iii, p. 895. 1878.

Carboniferous. Ohio. Exact syn. Buff limestone.

**Shawnee formation**, Haworth. Kan. Univ. Geol. Surv., vol. iii, pp. 93-94. 1898.

Carboniferous. Kansas. Included in Upper Coal Measures. Includes Osage shales, Topeka limestone, Calhoun shale, Dee Creek limestone, Tecumseh shale, and LeCompton limestone and shale.

**Shelby bed**, Foerste. Indiana Dept. Geol. and Nat. Res., 22d Ann. Rept., 1897, p. 235. 1898.

Devonian. Indiana.

**Shelbyville moraine**, Leverett. U. S. Geol. Surv., Mon., vol. xxxviii, pp. 192-217. 1899.

Pleistocene. Illinois.

**Shell Bluff group**, Conrad. Am. Jour. Sci., 2d ser., vol. xli, p. 96. 1866.

Tertiary. Upper Eocene. Mississippi.

**Shell Bluff group**, Dall. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, pp. 341, 342. 1898.

Tertiary. Georgia.

**Shenandoah limestone**, Darton. Am. Geol., vol. x, p. 13. 1892.

Silurian. Virginia. Part. syns. Trenton, Chazy, Lévis, and Calciferous.

**Shenandoah limestone**, Keith. U. S. Geol. Surv., 14th Ann. Rept., pt. ii, p. 337. 1894.

Cambrian-Silurian. Virginia and Maryland.

**Shenandoah limestone**, Campbell. Geol. Soc. Am., Bull., vol. v, p. 171. 1894.

Ordovician? Virginia.

**Shenandoah limestone**, Darton. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 14, 32. 1894, 1896.

Cambrian-Silurian. Virginia, West Virginia. Exact syns. Montgomery grits, Rogers, No. X, and Vespertine.

**Shenandoah limestone**, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 10. 1894.

Cambrian-Silurian. Virginia, Maryland, and West Virginia. Included in Cambro-Silurian.

**Shenandoah limestone**, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 26. 1896.

Cambro-Silurian. Virginia and West Virginia.

**Shenandoah formation**, Clark. Md. Geol. Surv., vol. i, pp. 157-178-180. 1897.

Cambro-Silurian. Maryland. Includes Upper and Lower.

- Shenandoah, Clark. Md. Geol. Surv., vol. ii, p. 170. 1898.  
Cambro-Silurian. Maryland.
- Shenandoah, Clark. Md. Geol. Surv., vol. iii, pp. 93, 97. 1899.  
Silurian-Cambrian. Maryland.
- Shenandoah limestone, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 59. 1899.  
Cambro-Silurian. Virginia, Tennessee.
- Shenandoah limestone, Darton. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 61. 1899.  
Silurian. Virginia and West Virginia.
- Shenandoah limestone, Prosser. Jour. of Geol., vol. viii, pp. 653-663. 1900.  
Silurian. Maryland and Virginia. Included in Ordovician.
- Shenango** sandstone, White. 2d Pa. Geol. Surv., Rept. Q<sup>3</sup>, pp. 60-61. 1880.  
Carboniferous. Pennsylvania. Included in Subconglomerate Measures.
- Shenango group, White. 2d Pa. Geol. Surv., Rept. Q<sup>1</sup>, pp. 77-81. 1881.  
Carboniferous. Pennsylvania. Included in Pocono.
- Shenango shale, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. i, p. 1749. 1895.  
Carboniferous. Pennsylvania. Included in No. x, Pocono.
- Sherburne** sandstone, Clarke. N. Y. State Geol., 15th Ann. Rept., p. 43. 1897.  
Devonian. New York.
- Sheridan** quartzite, Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 30. 1896.  
Algonkian. Wyoming.
- Sheridan beds, Scott. Geol. Soc. Am., Bull., vol. ix, p. 406. 1898.  
Pleistocene. Texas, New Mexico. Exact syn. Equus beds.
- Sheridan, Matthew. Am. Mus. Nat. Hist., Bull., vol. xii, p. 20. 1900.  
Pleistocene. Western U. S. Exact syn. Equus.
- Sheridan sandstone, Gregory. U. S. Geol. Surv., Bull. No. 165, p. 132. 1900.  
Maine.
- Sheridan sandstone, Williams. U. S. Geol. Surv., Bull. No. 165, p. 47. 1900.  
Silurian. Maine.
- Shiloh** marl, Dall. Wagner Free Inst. Sci., Trans., vol. iii, pt. ii, p. 209. 1892.  
Miocene. Florida(?). Included in Chipola epoch, Tampa group. Part syn. Tampa group.
- Shiloh marl, Dall and Harris. U. S. Geol. Surv., Bull. No. 84, pp. 40-41. 1892.  
Tertiary. New Jersey.
- Shiloh marl, Dall. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 340. 1898.  
Tertiary. New Jersey. Included in Chipola stage, Oligocene.
- Shimer** gypsum, Cragin. Am. Geol., vol. xix, pp. 356-358. 1897.  
Permian. Kansas, Oklahoma. Included in Cave Creek formation of Cimarron series.
- Shinarump**, Powell. U. S. Geog. and Geol. Surv., Geol. of Uinta Mts., pp. 41, 54, 150. 1876.  
Utah. Includes Upper and Lower Shinarump, Shinarump conglomerate.
- Shinarump conglomerate, Powell. U. S. Geog. and Geol. Surv., Geol. of Uinta Mts., p. 41. 1876.  
Utah. Included in Shinarump.
- Shinarump group, Gilbert. U. S. Geog. and Geol. Surv., Rept. on Henry Mts., p. 6. 1877.  
Utah.
- Shinarump, Dutton. U. S. Geog. and Geol. Surv., Geol. of High Plateaus of Utah, pp. 144, 207. 1880.  
Trias or Permian. Utah.
- Shinarump, Walcott. Geol. Soc. Am., Bull., vol. i, p. 62. 1889.  
Trias. Arizona.

- Shinersville** conglomerate, Platt. 2d Pa. Geol. Surv., Rept. G<sup>2</sup>, pp. 186-187. 1880.  
Carboniferous. Pennsylvania. Included in Pottsville.
- Shinersville** conglomerate, D'Invilliers. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. i, p. 1864. 1895.  
Carboniferous. Pennsylvania. Included in Pottsville.
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Carboniferous. Illinois. Included in Coal Measures.
- Shoal Creek** limestone, Broadhead. Ill. Geol. Surv., vol. vi, p. 133. 1875.  
Carboniferous. Illinois. Included in Coal Measures.
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Carboniferous. Illinois. Included in Coal Measures.
- Shoal Creek** limestone, Worthen. Ill. Geol. Surv., vol. vii, p. 11. 1883.  
Carboniferous. Illinois. Included in Coal Measures.
- Shoal Creek** limestone, Hill. Texas Geol. Surv., 1st Ann. Rept., pp. 129-130. 1890.  
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- Shoal Creek** limestone, Hill. Geol. Soc.<sup>8</sup> Am., Bull., vol. v, pp. 298, 319. 1894.  
Cretaceous. Texas.
- Shoal Creek** limestone, Hill and Vaughan. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, pp. 237-238. 1898.  
Cretaceous. Texas. Included in Washita division of Comanche series.
- Shoo Fly** beds, Diller. Geol. Soc. Am., Bull., vol. iii, p. 372. 1892.  
Carboniferous (?). California.
- Shunganunga** shale, Beede. Kan. Acad. Sci., Trans., vol. xv, p. 29. 1898.  
Carboniferous. Kansas. Included in base of Wabaunsee formation.
- Shunganunga** shales, Beede. Kan. Acad. Sci., Trans., vol. xvi, pp. 78-79. 1899.  
Carboniferous. Kansas.
- Shushitna** slates, Eldridge. U. S. Geol. Surv., 20th Ann. Rept., pt. vii, pp. 15-16. 1900.  
Alaska.
- Shuswap** series, Dawson. Can. Geol. Surv., new ser., vol. iv, pp. 29B, 31B. 1890.  
Archean. British Columbia, Canada.
- Shuswap** series, Dawson. Geol. Soc. Am., Bull., vol. ii, pp. 165, 168, 170. 1891.  
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- Shuswap** series, McConnell. Can. Geol. Surv., new ser., vol. vii, p. 33C. 1896.  
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- Shuswap** series, McConnell. Can. Geol. Surv., new ser., vol. x, p. 30A. 1898.  
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Algonkian. Lake Superior region. Included in Lower Marquette series.
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Algonkian. Michigan. Included in Lower Marquette series.
- Siderian**, Whitney and Wadsworth. Harvard Coll. Mus. Comp. Zool., Bull., vol. vii, 1880-84, p. 562. 1884.  
Included in Azoic system.
- Signal Hill** sandstone, Jukes. Gen. Rept. of Geol. of Newfoundland, p. 51 et seq. 1843.  
Algonkian. Newfoundland.
- Signal Hill** sandstone, Murray. Geol. of Newfoundland, p. 146. 1881.  
Algonkian. Newfoundland.

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Devonian (?). Tennessee. Included in Siliceous group.

Siliceous group, Safford. Am. Jour. Sci., 2d ser., vol. xii, pp. 359-361. 1851.

Silurian (?). Tennessee. Includes Siliceous beds, Cherty limestone.

Siliceous or sandy limestone, Safford. Am. Jour. Sci., 2d ser., vol. vii, p. 356. 1851.

Silurian. Tennessee.

Siliceous group, Safford. Geol. Recon. in the State of Tenn., 1st Rept., p. 159. 1856.

Carboniferous. Tennessee.

Siliceous group, Safford. Geol. of Tenn., pp. 338-351. 1869.

Silurian. Tennessee. Included in Lower Carboniferous. Exact syn. Siliceous stratum. Part. syns. Keokuk, Burlington, and St. Louis limestone.

Siliceous group, Smith. Ala. Geol. Surv., Rept., 1875, pp. 26, 100, 119. 1876.

Carboniferous. Alabama. Included in Subcarboniferous.

Siliceous group, Upper, Smith. Ala. Geol. Surv., Rept., 1877, 1878, pp. 14, 21. 1879.

Carboniferous. Alabama. Includes St. Louis or Coral limestone.

Siliceous group, Lower, Smith. Ala. Geol. Surv., Rept., 1877, 1878, p. 13. 1879.

Carboniferous. Alabama. Includes Keokuk, Burlington, and Barren group.

Siliceous, Upper, McCalley. Ala. Geol. Surv., Rept., 1879-1880, pp. 76, 88, 101, 109, 127, 132, 143, 149. 1881.

Carboniferous. Alabama. Included in Subcarboniferous. Exact syn. St. Louis.

Siliceous group, Stevenson. Am. Phil. Soc., Proc., vol. xix, pp. 231, 242. 1881.

Carboniferous. Virginia. Included in Upper Carboniferous.

Siliceous dolomite and chert, McCalley. Ala. Geol. Surv., Rept. on Valley regions, pt. ii, pp. 44-47, 116-118, 192-199, 256-264, 314-336, 456-464, 486-496, 516-521, 593-639, 713-725, 769-793. 1897.

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**Sillery** formation, Logan. Can. Geol. Surv., 1843-1863, pp. 225-297. 1863.

Lower Silurian. Canada (eastern). Included in Quebec group. Exact syn. Chazy (?).

Sillery division, Richardson. Can. Geol. Surv., Rept. 1863-1866, pp. 37-43. 1866.

Lower Silurian. Canada (Eastern). Included in Quebec group.

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Cambrian. Canada.

Sillery formation, Ells. Can. Geol. Surv., new ser., vol. iii, pt. ii, pp. 25K-84K, 89K-93K. 1889.

Cambrian. Canada. Included in Quebec group, Cambro-Silurian. Includes Upper and Lower Sillery.

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Cambrian. Canada. Included in Quebec group.

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Carboniferous. Kansas.

**Silveria** formation, Hershey. Am. Jour. Sci., 4th ser., vol. ii, pp. 324-330. 1896.

Pleistocene. Illinois. Exact syn. Kansas.

Silveria formation, Leverett. U. S. Geol. Surv., Mon., vol. xxxviii, pp. 111-118. 1899.

Pleistocene. Mississippi Valley.

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Tertiary. British Columbia. Included in Miocene.

Similkameen beds, Dawson. Can. Roy. Soc., Trans., vol. viii, sec. iv, pp. 75-91. 1891.

British Columbia.

- Similkameen formation, Russell. U. S. Geol. Surv., 20th Ann. Rept., pt. ii, pp. 114-117. 1900.  
Cretaceous. Washington.
- Simmons Bluff** beds, Dall. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 336. 1898.  
Pleistocene. South Carolina.
- Sioux quartzite**, Hayden. Am. Jour. Sci., 2d ser., vol. xliii, pp. 15-22. 1867.  
Huronian. South Dakota.
- Sioux quartzite**, White. Iowa Geol. Surv., vol. i, pp. 167-171. 1870.  
Archean. Iowa. Included in Huronian.
- Sioux quartzite**, Keyes. Iowa Geol. Surv., vol. i, p. 17. 1893.  
Archean. Iowa.
- Sioux quartzite**, Van Hise. Int. Cong. of Geol., 5th Sess., pl. xiv. 1893.  
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- Sioux quartzite**, Beyer. Iowa Geol. Surv., vol. vi, p. 111. 1896.  
Archean(?). Iowa. Included in Pre-Cretaceous.
- Sioux quartzite**, Beyer. Iowa Geol. Surv., vol. vi, pp. 71-112. 1897.  
Algonkian. Iowa.
- Sioux quartzite**, Wilder. Iowa Geol. Surv., vol. x, p. 98. 1900.  
Algonkian. Iowa.
- Skaneateles** shale, Hall. Am. Jour. Sci., 1st ser., vol. xlii, p. 57. 1842.  
Devonian. New York. Included in Ludlowville group.
- Skunnemunk** conglomerate, Darton. Geol. Soc. Am., Bull., vol. v, pp. 367, 371. 1894.  
Devonian. New York, New Jersey. Included in Middle Devonian.
- Skunnemunk** conglomerate, Ries. N. Y. State Geol., 15th Ann. Rept., vol. i, p. 404. 1897.  
Devonian. New York.
- Skwentna** series, Spurr. U. S. Geol. Surv., 20th Ann. Rept., pt. vii, pp. 149-152, 180. 1900.  
Juratrias. Alaska.
- Smalls Brook** limestone, Arn. Brit. Assoc. Adv. Sci., Rept., 1899, p. 756. 1899.  
Carboniferous. Nova Scotia.
- Smelt Brook** shales, Ami. Brit. Assoc. Adv. Sci., Rept., 1899, p. 756. 1899.  
Carboniferous. Nova Scotia.
- Smelt Brook** formation, Ami. Can. Rec. Sci., vol. viii, pp. 162-163. 1900.  
Carboniferous. Canada. Included in Neo-Carboniferous.
- Smith River** lake beds, Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 56. 1899.  
Included in Neocene. Montana.
- Smith River** lake beds, Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 56. 1899.  
Montana. Included in Neocene.
- Smithfield** limestone, Shaler, Woodworth and Foerste. U. S. Geol. Surv., Mon., vol. xxxiii, p. 107. 1899.  
Algonkian. Rhode Island. Included in Blackstone series.
- Smoky Hill** chalk, Cragin. Colo. Coll. Stud., vol. vi, p. 51. 1896.  
Cretaceous. Kansas. Included in Niobrara, Upper formation.
- Smoky Hill** chalk, Williston. Kan. Univ. Quart., vol. iv, p. 251. 1896.  
Upper Cretaceous. Kansas. Included in Niobrara. Exact syn. Pteranodon beds.
- Smoky Hill** chalk, Logan. Kan. Univ. Geol. Surv., vol. ii, pp. 220-221. 1897.  
Upper Cretaceous. Kansas. Included in Niobrara. Exact syn. Pteranodon beds.
- Smoky River** series, Dawson. Can. Geol. Surv., Rept., 1879-80, pp. 115B, 125B. 1881.  
Cretaceous. British Columbia. Included in Colorado group. Exact syn. Upper dark shales. Part. syn. Pierre.



- Smoky River shales, Dawson. Am. Jour. Sci., 3d ser., vol. xxi, p. 392. 1881.  
Cretaceous. Canada. Exact syn. Pierre.
- Smoky River shales, McConnell. Can. Geol. Surv., new ser., vol. v, pt. i, pp. 50D, 53D-54D. 1893.  
Cretaceous. Canada. Included in Montana group.
- Sneedville** limestone, Safford. Geol. Recon. of the State of Tenn., 1st Rept., p. 157. 1856.  
Tennessee. Included in Dyestone and Gray limestone group.
- Sneedville limestone(?), Safford. Geol. of Tenn., p. 312. 1869.  
Silurian. Tennessee. Included in Niagara group. Exact syn. Meniscus limestone.
- Snyder Creek** shales. Mo. Bur. Geol. and Mines, Rept. on Structural and Economic Geology, p. 153. 1900.  
Missouri. Devonian.
- Sockanosset** sandstones, Shaler, Woodworth and Foerste. U. S. Geol. Surv., Mon., vol. xxxiii, p. 163. 1899.  
Carboniferous. Rhode Island. Included in Cranston beds.
- Soldier Creek** shales, Beede. Kan. Acad. Sci., Trans., vol. xv, p. 30. 1898.  
Carboniferous. Kansas.
- Sooke** beds, Merriam. Univ. of Cal., Dept. of Geol., Bull., vol. ii, p. 106. 1896.  
Tertiary. British Columbia. Included in Neocene.
- Sooke beds, Dall. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 338. 1898.  
Tertiary. British Columbia. Included in Miocene.
- Sopchoppy** limestone, Dall and Harris. U. S. Geol. Surv., Bull. No. 84, p. 119. 1892.  
Tertiary. Florida.
- South Carrollton** limestone, Norwood. Ky. Geol. Surv., new ser., vol. iv, pp. 296-297. 1878.  
Carboniferous. Kentucky. Included in Coal Measures. Exact syn. Madisonville limestone(?).
- South Mountain** gneiss, Hall. 2d Pa. Geol. Surv., Rept. D<sup>3</sup>, pt. i, pp. 215-255. 1883.  
Archean. Pennsylvania.
- South Valley Hill** mica schists, Hall. 2d Pa. Geol. Surv., Rept. C<sup>6</sup>, pp. 31-33. 1881.  
Pennsylvania. Exact syn. Hudson River group.
- South Valley Hill slate, Lesley. 2d Pa. Geol. Surv., Final Rept., pp. 199-204. 1892.  
Cambrian. Pennsylvania. Exact syn. Primal Lower slate.
- Spadra** stage, Stevenson. N. Y. Acad. Sci., Trans., vol. xv, p. 51. 1896.  
Carboniferous. Arkansas.
- Sperry** limestone, Emmons. Agric. of N. Y., vol. i, pp. 72-74. 1846.  
New York, New England. Included in Taconic system.
- Sperry limestone, Dana. Am. Jour. Sci., 3d ser., vol. xiii, pp. 343-414. 1877.  
Silurian. Vermont. Included in Eolian limestone. Exact syn. Trenton.
- Sparta** sands, Vaughan. U. S. Geol., vol. xv, p. 225. 1895.  
Louisiana.
- Sparta sands, Vaughan. U. S. Geol. Surv., Bull., No. 142, p. 25. 1896.  
Tertiary or Pleistocene. Louisiana.
- Speck Mountain** bed, Drake. Texas Geol. Surv., 4th Ann. Rept., pp. 407-408. 1893.  
Carboniferous. Texas. Included in Cisco division.
- Sphinx** conglomerate, Peale. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 24. 1896.  
Included in Eocene. Montana.
- Sphinx conglomerate, Smith. Jour. of Geol., vol. viii, p. 464. 1900.  
Tertiary. Montana. Included in Eocene.

- Spirifera Pennata** beds, Calvin. Am. Geol., vol. viii, p. 143. 1891.  
Devonian. Iowa.
- Spokane** shale, Walcott. Geol. Soc. Am., Bull., vol. x, pp. 199, 207. 1899.  
Algonkian, Pre-Cambrian. Montana. Included in Belt terrane.
- Spokane shale, Weed. U. S. Geol. Surv., 20th Ann. Rept., pt. iii, p. 282. 1900.  
Algonkian. Montana. Included in Belt terrane.
- Spring Creek** bed, Drake. Texas Geol. Surv., 4th Ann. Rept., p. 381. 1893.  
Carboniferous. Texas. Included in Strawn division.
- Spring Creek clays, Gould. Am. Jour. Sci., 4th ser., vol. v, pp. 170-173. 1898.  
Cretaceous. Kansas. Included in Medicine beds.
- Spring Creek limestone, Williams. Ark. Geol. Surv., 1892, vol. v, pp. 341-354. 1900.  
Carboniferous. Arkansas. Exact syn. Fayetteville shale.
- Spring River** sandstone, White. Geol. Soc. Am., Bull., vol. viii, p. 288. 1897.  
Upper Carboniferous. Missouri. Included in Des Moines series.
- Spring Rock** series, Swallow. Kan. Geol. Surv., Prelim. Rept., pp. 21, 77. 1866.  
Carboniferous. Kansas.
- Springfield** stone, Orton. Ohio Geol. Surv., Rept. Prog., 1870, pp. 271, 301. 1871.  
Silurian. Ohio. Included in Niagara series.
- Springfield, Orton. Ohio Geol. Surv., vol. ii, p. 671. 1874.  
Silurian. Ohio. Included in Niagara.
- Springfield beds, Phinney. Indiana Dept. Geol. and Nat. Hist., 13th Ann. Rept., 1883, pp. 142, 147. 1884.  
Upper Silurian. Indiana.
- Springfield clay, James. Cin. Soc. Nat. Hist., Jour., vol. ix, no. 2, p. 27. 1886.  
Glacial. Ohio.
- Springfield strata, Foerste. Denison Univ. Sci. Lab., Bull., vol. iii, p. 6. 1888.  
Ohio.
- Springfield limestone, Orton. Ohio Geol. Surv., Prelim. Rept. Petroleum and Inflammable Gas, p. 21. 1886.  
Ohio. Included in Niagara series.
- Springfield rock, Foerste. Cin. Soc. Nat. Hist., Jour., vol. xviii, Nos. 3, 4, pp. 178, 190. 1896.  
Silurian. Ohio.
- Springvale** beds, Bain. Am. Geol., vol. xv, p. 320. 1895.  
Carboniferous. Iowa. Included in Mississippian series, St. Louis.
- Springvale beds, Bain. Iowa Geol. Surv., vol. iv, pp. 277-279. 1895.  
Carboniferous. Iowa. Included in St. Louis.
- Springvale beds, Bain. Iowa Geol. Surv., vol. v, pp. 147-149. 1896.  
Carboniferous. Iowa. Included in St. Louis.
- Squanjum** marl, Conrad. Am. Jour. Sci., 2d ser., vol. xlvii, p. 363. 1869.  
Tertiary. New Jersey.
- Square Lake** limestone, Williams. U. S. Geol. Surv., Bull. No. 165, p. 54. 1900.  
Silurian. Maine.
- Stafford** limestone, Bishop. N. Y. State Geol., 15th Ann. Rept., p. 314. 1897.  
Devonian. New York. Included in Marcellus formation.
- Stamford** gneiss, Wolff. U. S. Geol. Surv., Mon., vol. xxiii, p. 45. 1894.  
Pre-Cambrian. Massachusetts.
- Stanford** conglomerate, Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 55. 1899.  
Pleistocene. Montana.
- Stanton** limestone, Swallow and Hawn. Geol. of Miami Co., Kan., p. 6. 1865.  
Carboniferous. Kansas. Included in Coal Measures.

- Stanton limestone series, Swallow. Kan. Geol. Surv., Prelim. Rept., pp. 20, 74. 1866.  
Carboniferous. Kansas.
- Stanton limestone, Beede. Kan. Acad. Sci., Trans., vol. xv, p. 30. 1898.  
Carboniferous. Kansas.
- Stanton limestones, Keyes. Iowa Acad. Sci., Proc., vol. vii, p. 88. 1900.  
Carboniferous. Mississippi Valley. Included in Coal Measures.
- Star Peak**, Hague. U. S. Geol. Expl., 40th Parallel, vol. ii, pp. 645, 682, 693, 717-733. 1877.  
Trias. Nevada.
- Star Peak, King. U. S. Geol. Expl. of 40th Parallel, vol. i, p. 544. 1878.  
Trias. Included in Red beds.
- Starr** conglomerate, Hayes. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 20. 1895.  
Cambrian. Tennessee. Included in Chilhowee series.
- Starucca** shale, White. 2d Pa. Geol. Surv., Rept. G<sup>5</sup>, p. 70. 1881.  
Devonian. Pennsylvania. Included in Catskill.
- Starucca, White. 2d Pa. Geol. Surv., Rept. G<sup>6</sup>, pp. 102-103. 1882.  
Devonian. Pennsylvania. Included in Catskill.
- Starucca shale. Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, p. 1152. 1892.  
Devonian. Pennsylvania. Included in Catskill, No. 9.
- Starucca sandstone, Prosser. U. S. Geol. Surv., Bull. No. 120, p. 78. 1894.  
Devonian. New York, Pennsylvania. Included in Chemung, Upper Devonian.
- State Quarry** limestone, Calvin. Iowa Geol. Surv., vol. vii, pp. 72-69. 1897.  
Devonian. Iowa.
- State Quarry limestone, Calvin. Iowa Acad. Sci., Proc., vol. iv, pp. 16-21. 1897.  
Devonian. Iowa.
- Steep Rock** series, Smyth. Am. Jour. Sci., 3d ser., vol. xlii, pp. 319-331. 1891.  
Ontario.
- Steep Rock series, Smith. Geol. Soc. Am., Bull., vol. iv, pp. 333, 344. 1893.  
Archean. Ontario.
- Steep Rock series, McInnes. Can. Geol. Surv., new ser., vol. x, pp. 20H-23H. 1898.  
Ontario.
- Steilacoom**, gravels, Willis and Smith. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 54. 1899.  
Pleistocene. Washington.
- Stellarton** formation, Ami. Can. Rec. Sci., vol. viii, p. 162. 1900.  
Carboniferous. Canada. Included in Middle Carboniferous.
- Stockbridge** limestone, Emmons. Agric. of N. Y., vol. i, pp. 78-83. 1846.  
New England. Included in Taconic system.
- Stockbridge limestone, Dana. Am. Jour. Sci., 3d ser., vol. iii, pp. 179, 184, 186, 253. 1872.  
Silurian. New York.
- Stockbridge limestone, Dana. Am. Jour. Sci., 3d ser., vol. iv, pp. 362-370, 450-453; vol. v, pp. 47-52, 84-90; vol. vi, pp. 257-278. 1872-73.  
Silurian. Massachusetts. Included in Hudson River group. Part. syn. Trenton limestone.
- Stockbridge limestone, Julien. N. Y. Acad. Sci., Trans., vol. vii, pp. 21-39. 1888.  
Cambrian. Massachusetts and Vermont.
- Stockbridge limestone, Dale. Geol. Soc. Am., Bull., vol. iii, pp. 514-518. 1892.  
Cambro-Silurian. Vermont.
- Stockbridge limestone, Dale. U. S. Geol. Surv., 13th Ann. Rept., pt. ii, p. 301. 1893.  
Cambrian. New York.

- Stockbridge limestone, Dale. U. S. Geol. Surv., 14th Ann. Rept., pt. ii, pls. 67, 69, 71. 1894.  
 Cambro-Silurian. Vermont, Massachusetts.
- Stockbridge limestone, Wolff. U. S. Geol. Surv., Mon., vol. xxiii, pp. 20, 64-65, 69, 72, 84-98, 179-182. 1894.  
 Silurian. Massachusetts.
- Stockbridge limestone, Marcou. Am. Geol., vol. xix, pp. 113-116. 1897.  
 Cambrian. New England.
- Stockbridge limestone, Emerson. U. S. Geol. Surv., Bull. No. 159, pp. 84-85. 1899.  
 Silurian. Massachusetts.
- Stockton series**, Kummel. Jour. of Geol., vol. v, pp. 543-544. 1897.  
 Juratrias. New Jersey. Included in Newark system.
- Stockton series, Kummel. N. J. Geol. Surv., Rept., 1896, pp. 35-40. 1897.  
 Juratrias. New Jersey. Included in Newark system.
- Stockton series, Kummel. N. J. Geol. Surv., Rept., 1897, pp. 30-36. 1898.  
 Juratrias. New Jersey. Included in Newark system.
- Stockton group, Kummel. Jour. of Geol., vol. vii, pp. 24-25. 1899.  
 Juratrias. New York, New Jersey. Included in Newark.
- Stockwether bed**, Drake. Texas Geol. Surv., 4th Ann. Rept., p. 417. 1893.  
 Carboniferous. Texas. Included in Cisco division.
- Stokes sandstone**, Cragin. Am. Geol., vol. xvi, p. 367. 1895.  
 Cretaceous. Kansas. Included in Elk Creek beds, Cheyenne sandstone, and Belvidere beds.
- Stones River beds**, Safford. Am. Jour. Sci., 2d ser., vol. xii, p. 254. 1851.  
 Silurian. Tennessee. Included in Stones River group.
- Stones River group, Safford. Am. Jour. Sci., 2d ser., vol. xii, pp. 354-356. 1851.  
 Silurian. Tennessee. Includes Stones River beds, Lower Lebanon limestone, and Upper Lebanon limestone.
- Stones River group, Safford. Am. Assoc. Adv. Sci., Proc., vol. vii, p. 153. 1853.  
 Silurian. Tennessee. Exact syns. Lower Trenton and Black River group.
- Stones River, Safford. Geol. Recon. of the State of Tenn., 1st Rept., p. 155. 1856.  
 Silurian. Tennessee. Included in Central limestone and shale group. Part. syns. Black River and Lower Trenton of New York.
- Stony Brook group**, White. 2d Pa. Geol. Surv., Rept. G<sup>7</sup>, p. 439. 1883.  
 Devonian. Pennsylvania. Included in Chemung.
- Stony Brook beds, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 1564-1566. 1892.  
 Devonian. Pennsylvania. Included in Chemung.
- Stonybrook quartzite, Hobbs. Am. Geol., vol. xxiii, p. 110. 1899.  
 Cambrian. Massachusetts.
- Stormville**, White. 2d Pa. Geol. Surv., Rept. G<sup>6</sup>, pp. 131-137. 1882.  
 Silurian. Pennsylvania. Included in Lower Helderberg or No. vi.
- Stormville, White. 2d Pa. Geol. Surv., Rept. G<sup>7</sup>, pp. 94-97. 1883.  
 Silurian. Pennsylvania. Included in Lower Helderberg or No. vi.
- Stormville shale, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. ii, pp. 924-925, 944, 948, 959, 1048, 1065, 1074. 1892.  
 Silurian. Pennsylvania. Included in No. vi; includes Bastard limestone. Exact syn. Oriskany shale.
- Stormville sandstone, Weller. N. J. Geol. Surv., Rept. 1899, p. 39. 1900.  
 Devonian. New Jersey.
- Strawn division**, Cummins. Texas Geol. Surv., 2d Ann. Rept., p. 374. 1891.  
 Carboniferous. Texas. Included in Coal Measures.

- Strawn division**, Drake. Texas Geol. Surv., 4th Ann. Rept., pp. 374-387. 1893.  
Carboniferous. Texas. Includes Ricker, Antelope Creek, Indian Creek, Comanche Creek, Wilbarger Creek, Buffalo Creek, Rough Creek, Hanna Valley, Cottonwood Creek, Spring Creek, Brown Creek, Big Valley, Bull Creek, Horse Creek, Fox Ford, Bed No. VIII, Shadrick Mill, Elliott Creek, Burnt Branch, and Lynch Creek beds.
- Strawn limestone**, Haworth and Kirk. Kan. Univ. Quart., vol. ii, p. 110. 1894.  
Carboniferous. Kansas.
- Strawn, limestone**, Kirk. Kan. Univ. Geol. Surv., vol. i, p. 79. 1896.  
Carboniferous. Kansas.
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Archean. Minnesota. Included in Keewatin.
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- Sturgeon quartzite**, Van Hise and Bayley. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 62. 1900.  
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- Styliolina limestone**, Grabau. Buff. Soc. Nat. Hist., Bull., vol. vi, pp. 11, 13. 1898.  
Devonian. New York.
- Subconglomerate measures**, White. 2d Pa. Geol. Surv., Rept. Q<sup>3</sup>, pp. 59-63. 1880.  
Carboniferous. Pennsylvania. Includes Shenango shale and sandstone, Crawford shale, Sharpsville sandstone.
- Subconglomerate**, White. 2d Pa. Geol. Surv., Rept. Q<sup>4</sup>, pp. 67-116. 1881.  
Carboniferous. Pennsylvania. Includes Shenango, Meadville, and Oil Lake groups, and Venango oil sand.
- Sucarnochee series**, Dall. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 348. 1898.  
Tertiary. Alabama. Included in Eocene.
- Sugar Loaf arkose**, Emerson. Geol. Soc. Am., Bull., vol. ii, p. 452. 1891.  
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- Suisure marble**, Whitney. Cal. Geol. Surv., vol. i, p. 104. 1865.  
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Cretaceous. Utah.

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Carboniferous. Pennsylvania. Included in Lower Barren series.

**Summit** limestone, McGee. St. Louis Acad. Sci., Trans., vol. v, p. 331. 1892.

Carboniferous. Missouri.

**Sumner**, Cragin. Colo. Coll. Stud., vol. vi, pp. 3, 9. 1896.

Permian. Kansas. Included in Upper division of Big Blue series.

**Sunbury** slate, Hicks. Am. Jour. Sci., 3d ser., vol. xvi, pp. 216, 220. 1878.

Carboniferous. Ohio. Included in Waverly group.

**Sundance** formation, Darton. Geol. Soc. Am., Bull., vol. x, pp. 387-393. 1899.

Jurassic. Black Hills.

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Alaska. Included in Upper Paleozoic.

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Cretaceous and Tertiary. California.

**Superjacent** series, Turner. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 37. 1897.

Cretaceous and younger. California.

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**Superjacent** series, Lindgren. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 39. 1897.

Tertiary and Pleistocene. California.

**Superjacent** series, Turner. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 43. 1898.

Cretaceous and younger. California.

**Superjacent** series, Turner and Ransome. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 51. 1898.

Included in Neocene. California.

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Cretaceous to Pleistocene. California.

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California.

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Maine.

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**Swanton** slate, Perry. Boston Soc. Nat. Hist. Proc., vol. xi, 1866-68, p. 347 et seq. 1867.

Vermont.

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Trias. California. Included in Upper Norie.
- Swearinger shale, Smith. Jour. of Geol., vol. ii, pp. 605-606. 1894.  
Trias. California. Included in Cedar formation.
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- Sweetland Creek beds, Udden. Iowa Geol. Surv., vol. ix, p. 289. 1899.  
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- Sweetwater**, Endlich. U. S. Geol. and Geog. Surv. of Terr., 11th Ann. Rept., p. 110. 1879.  
Tertiary. Wyoming.
- Sweetwater group, Dall and Harris. U. S. Geol. Surv., Bull. No. 84, p. 310. 1892.  
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- Swift Water** series, Hitchcock. Am. Jour. Sci., 3d ser., vol. vii, pp. 568-571. 1874.  
New Hampshire.
- Swift Water series, Hitchcock. Geol. of N. H., pt. ii, pp. 320-325. 1877.  
Paleozoic. New Hampshire.
- Swift Water series, Hitchcock. Geol. Soc. Am., Bull., vol. vii, p. 512. 1896.  
Cambrian(?). New Hampshire.
- Sylamore** sandstone, Williams. Am. Jour. Sci., 4th ser., vol. viii, pp. 149-151. 1898.  
Carboniferous. Arkansas. Included in Upper Devonian.
- Sylamore sandstone, Williams. Ark. Geol. Surv., 1892, vol. v, pp. 302-322. 1900.  
Devonian. Arkansas.
- Sylvania** sandstone, Orton. Ohio Geol. Surv., vol. vi, pp. 4, 18. 1888.  
Upper Silurian. Ohio. Included in Lower Helderberg limestone.
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Silurian. Ohio. Included in Niagara limestone.
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- Sylvania sandstone, Sherzer. Mich. Geol. Surv., vol. vii, pt. i, pp. 53-66. 1900.  
Silurian. Michigan.
- Syntrialasina** limestone, Bennett. Kan. Univ. Geol. Surv., vol. i, pp. 111-113. 1896.  
Carboniferous. Kansas.
- Syrtensian**, Matthew. Can. Nat., 2d ser., vol. vii, pp. 438-441. 1875.  
Canada. Included in Quaternary.
- Tachatna** series, Spurr. U. S. Geol. Surv., 20th Ann. Rept., pt. vii, pp. 157-159, 179. 1900.  
Devonian-Carboniferous. Alaska.
- Taconic** system, Emmons. Geol. of N. Y., pt. ii, pp. 135-163. 1842.  
New York. Includes Stockbridge limestone, Sperry limestone, Magnesian slate, and Granular quartz. Part. syns. Lower Cambrian and Lower Silurian.
- Taconic system, Mather. Geol. of N. Y., pt. i, pp. 422-438. 1843.  
New York.

- Taconic system, Emmons. Agric. of N. Y., vol. i, pp. 45-112. 1846.  
New York and New England. Includes Black and Taconic slate, Sparry limestone, Magnesian slate, Stockbridge limestone, Granular quartz.
- Taconic slate, Emmons. Agric. of N. Y., vol. i, pp. 65-71. 1846.  
New York. Included in Taconic system.
- Taconic, Emmons. Geol. Rept. of Midland Cos. of N. C., p. 49 et seq. 1856.  
Cambrian. North Carolina.
- Taconic system, Hitchcock. Geol. of Vt., vol. i, pp. 434-447. 1861.  
Cambrian. Vermont.
- Taconic system, Barrande. Am. Jour. Sci., 2d ser., vol. xxxi, pp. 212-215. 1861.  
Vermont.
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New York, Massachusetts.
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New York, New England.
- Taconic, Perry. Boston Soc. Nat. Hist., Proc., vol. xi, 1866-1868, p. 352. 1867.  
Vermont.
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- Taconic, Dana. Am. Nat., vol. vi, p. 177. 1872.
- Taconic, Dana. Am. Assoc. Adv. Sci., Proc., vol. xxii, p. 27. 1873.  
Silurian. Massachusetts. Included in Hudson River and Trenton.
- Taconic slate, Crosby. Rept. on Geol. Map of Mass., p. 40. 1876.  
Pre-Cambrian. Massachusetts.
- Taconic slates, Dana. Am. Jour. Sci., 3d ser., vol. xiv, pp. 202-203. 1877.  
Silurian. Vermont, Massachusetts. Part. syn. Hudson River or Cincinnati group.
- Taconic, Hunt. 2d Pa. Geol. Surv., Rept. E, pp. 43-62. 1878.  
Cambrian. Pennsylvania and general.
- Taconian, Hunt. Boston Soc. Nat. Hist., Proc., vol. xix, 1876-1878, p. 278. 1878.  
Exact syn. Lower Taconic.
- Taconic system, Miller. Cin. Soc. Nat. Hist., Jour., vol. iv, no. 4, p. 271. 1881.
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Pre-Potsdam. New York. Exact syn. Hastings series of Canada.
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Included in Azoic system.
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Cambrian.

Taconian, Pumpelly. Geol. Soc. Am., Bull., vol. iv, p. 383. 1893.

Archean(?). Canada(?).

Taconic, Nitze and Hanna. N. C. Geol. Surv., Bull. No. 3, pp. 28-32, 43. 1896.

Cambrian. North Carolina. Includes Upper and Lower Taconic.

Taconic, Marcou. Am. Geol., vol. xix, pp. 38-39. 1897.

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Cambrian. Minnesota. Includes Animikie and Keweenawan. Exact syn. Lower Cambrian.

**Taconyte**, Grant. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iv, p. 354. 1899.

Cambrian. Minnesota. Included in Animikie.

Taconyte, Winchell. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iv, pp. 367, 391. 1899.

Cambrian. Minnesota. Included in Animikie.

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Alaska.

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Carboniferous or Devonian. Alaska.

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Cambrian(?). Vermont. Exact syn. Magnesian slate.

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Alabama. Exact syn. Ocoee slates.

**Tallahatta** formation, Dall. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 344. 1898.

Tertiary. Georgia, Alabama. Included in Claibornian stage, Eocene. Exact syns. Orangeburg formation, Buhrstone.

**Taloga** formation, Cragin. Am. Geol., vol. xix, pp. 362-363. 1897.

Permian. Kansas, Oklahoma. Included in Kiger division of Cimarron series.

**Talpa** bed, Drake. Texas Geol. Surv., 4th Ann. Rept., p. 428. 1893.

Carboniferous. Texas. Included in Albany division.

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Tertiary. Trinidad. Included in Newer Parian group.

- Tampa** beds, Dall. Wagner Free Inst. Sci., Trans., vol. iii, pt. ii, p. 209. 1892.  
Miocene. Florida. Included in Chipola epoch, Tampa group. Part. syn. Tampa group.
- Tampa group**, Dall. Wagner Free Inst. Sci., Trans., vol. iii, pt. ii, p. 209. 1892.  
Miocene. Florida. Included in Chipola epoch. Includes Shiloh marls, Tampa and Chipola beds.
- Tampa group**, Dall and Harris. U. S. Geol. Surv., Bull. No. 84, p. 112. 1892.  
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- Tampa limestone**, Dall and Harris. U. S. Geol. Surv., Bull. No. 84, p. 117. 1892.  
Tertiary. Florida. Included in Miocene.
- Tampa limestone**, Dall and Stanley-Brown. Geol. Soc. Am., Bull., vol. v, p. 164. 1894.  
Tertiary. Florida. Included in Chattahoochee.
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Alaska. Included in Nasina series.
- Tanana schists**, Mendenhall. U. S. Geol. Surv., 20th Ann. Rept., pt. vii, pp. 313-315. 1900.  
Pre-Silurian. Alaska.
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Carboniferous. Kentucky. Included in Subcarboniferous.
- Tar spring sandstone**, Moore. Ky. Geol. Surv., vol. iv, new ser., p. 392. 1878.  
Carboniferous. Kentucky. Included in Chester group. Exact syn. Big Clifty sandstone.
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- Tassajara** lake(?) bed, Cooker. Cal. Acad. Sci., Proc., 1893-4, 2d ser., vol. iv, p. 170. 1895.  
Pliocene. California.
- Taunton** clays, Woodworth. U. S. Geol. Surv., 17th Ann. Rept., pt. i, p. 986. 1896.  
Massachusetts.
- Taylor** marl, Hill. Artesian Invest., Final Rept., pt. iii, p. 73, 52d Cong., 1st sess., Ex. Doc. 41, pt. iii. 1892.  
Cretaceous. Southwest. Exact syn. *Exogyra ponderosa* marls.
- Taylor**, Hill. Geol. Soc. Am., Bull., vol. v, p. 301. 1894.  
Cretaceous. Indian Territory.
- Taylor formation**, Hill and Vaughan. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 240. 1898.  
Cretaceous. Texas. Included in Montana division of Gulf series. Exact syn. *Exogyra ponderosa* marls.
- Taylor's ridge**, Little. Handbook of Ga., Com. of Agric., 1876, p. 41. 1876.  
Silurian. Georgia. Included in Upper Niagara. Part. syn. Medina.
- Taylorville** slate, Diller. Geol. Soc. Am., Bull., vol. iii, p. 372. 1892.  
Silurian(?). California.
- Teay** formation, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 69. 1900.  
Pleistocene(?). West Virginia and Ohio.
- Tecumseh** shales, Haworth. Kan. Univ. Geol. Surv., vol. iii, pp. 73, 94. 1898.  
Carboniferous. Kansas. Included in Shawnee formation.
- Tecumseh shales**, Beede. Kan. Acad. Sci., Trans., vol. xv, p. 28. 1898.  
Carboniferous. Kansas.



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California.
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Cretaceous(?). California.
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- Tejon, Clark. U. S. Geol. Surv., Bull. No. 83, p. 100. 1891.  
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- Tejon, Diller. Geol. Soc. Am., Bull., vol. iv, p. 218. 1893.  
Tertiary. California, Oregon. Included in Eocene.
- Tejon, Turner. Am. Geol., vol. xiii, p. 238. 1894.  
Tertiary. California. Included in Eocene.
- Tejon, Diller and Stanton. Geol. Soc. Am., Bull., vol. v, p. 436. 1894.  
Tertiary. California and Oregon. Included in Eocene.
- Tejon, Emmons and Merrill. Geol. Soc. Am., Bull., vol. v, p. 496. 1894.  
Tertiary. Mexico. Included in Eocene.
- Tejon formation, Turner and Ransome. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 41. 1897.  
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Tertiary. California. Included in Eocene.
- Tejon formation, Smith. Jour. of Geol., vol. viii, pp. 461-462. 1900.  
Tertiary. California. Included in Eocene.
- Tellico** sandstone, Hayes. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 20. 1895.  
Silurian. Tennessee.
- Tellico sandstone, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 16, 25, 27. 1895, 1896.  
Silurian. Tennessee, North Carolina.
- Tellico sandstone, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 59. 1899.  
Silurian. Virginia and Tennessee.
- Tellowa** formation, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 44. 1897.  
Carboniferous. Virginia, West Virginia. Part. syns. No. xiii, Lower Coal group of Rogers.
- Temple Butte** limestone, Walcott. Geol. Soc. Am., Bull., vol. i, p. 50. 1889.  
Devonian. Arizona.
- Tenmile River** beds, Shaler, Woodworth and Foerste. U. S. Geol. Surv., Mon., vol. xxxiii, pp. 164-173. 1899.  
Carboniferous. Rhode Island. Included in Coal Measures.
- Tentaculite** limestone, Darton. N. Y. State Geol., 13th Ann. Rept., pp. 247-248, 305. 1894.  
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- Terra Cotta** series, Spurr. U. S. Geol. Surv., 20th Ann. Rept., pt. vii, pp. 156-157, 180. 1900.  
Juratrias. Alaska.
- Terrace** period, Hitchcock. Smithsonian Inst. Contrib., vol. ix, No. 2, p. 2. 1857.  
Quaternary. Massachusetts.
- Terrace formations, Lawson. Univ. of Cal., Dept. of Geol., Bull., vol. i, pp. 1-59. 1893.  
Pliocene(?). California.
- Terranovan** series, Hunt. Am. Jour. Sci., 3d ser., vol. i, pp. 182-191. 1871.  
Archean. Maine, New Brunswick.

- Teton**, Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 30. 1896.  
Juratrias. Wyoming.
- Teton formation**, Iddings and Weed. U. S. Geol. Surv., Mon., vol. xxxii, pt. ii, pp. 1-59, 149-164. 1899.  
Juratrias. Yellowstone Park.
- Texan system**, Dumble. Texas Geol. Surv., 1st Ann. Rept., pl. iii, p. lvii. 1890.  
Algonkian. Texas. Includes Packsaddle, Llano, and Mason series.
- Texan system**, Comstock. Texas Geol. Surv., 1st Ann. Rept., p. 276. 1890.  
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Cretaceous. Texas. Included in Fredericksburg division.
- Texana limestone**, Taff. Texas Geol. Surv., 4th Ann. Rept., pp. 249-256. 1893.  
Cretaceous. Texas. Included in Fredericksburg division of Lower Cretaceous.  
Exact syn, Goodland limestone.
- Texanan beds**, Drake. Texas Geol. Surv., 4th Ann. Rept., pp. 368-370. 1893.  
Cretaceous. Texas.
- Texian system**, Comstock. Texas Geol. Surv., 2d Ann. Rept., pp. 562-563, 658-659. 1891.  
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Carboniferous. Kansas. Included in Coal Measures.
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Carboniferous. Kansas.
- Thayer shales**, Adams. Kan. Univ. Geol. Surv., vol. i, p. 24. 1896.  
Carboniferous.
- Thayer shales**, Kirk. Kan. Univ. Geol. Surv., vol. i, pp. 76-77. 1896.  
Carboniferous. Kansas.
- Thayer shales**, Bennett. Kan. Univ. Geol. Surv., vol. i, p. 97. 1896.  
Carboniferous. Kansas.
- Thayer shales**, Haworth. Kan. Univ. Geol. Surv., vol. iii, pp. 49-50, 92, 94, 103. 1898.  
Carboniferous. Kansas. Included in Pottawatomie formation.
- Thayer shale**, Orton. Geol. Soc. Am., Bull., vol. x, p. 104. 1899.  
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- Trenton limestone, Hall. Am. Jour. Sci., 2d ser., vol. xvii, pp. 181-193. 1854.  
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- Trenton limestone, Hitchcock. Geol. of Vt., vol. i, pp. 281-301. 1861.  
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Silurian. Canada. Included in Lower Silurian, Ontario group.
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Silurian. Canada.
- Trenton limestone, Freeman. Ill. Geol. Surv., vol. iii, pp. 276-279. 1866.  
Silurian. Illinois.
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Lower Silurian. Minnesota.
- Trenton limestone, Worthen. Ill. Geol. Surv., vol. v, pp. 279-280. 1873.  
Silurian. Illinois.
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- Trenton limestone, Broadhead. Mo. Geol. Surv., Rept. 1855-1871, p. 49. 1873.  
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Lower Silurian. Minnesota. Exact syn. Blue limestone.
- Trenton limestone, Harrington. Minn. Geol. and Nat. Hist. Surv., 4th Ann. Rept., p. 90. 1876.  
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- Trenton, Smith. Ala. Geol. Surv., Rept. 1875, pp. 25, 99, 111. 1876.  
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Lower Silurian. Wisconsin.
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Pleistocene. Pennsylvania.

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- Trenton, McCalley. Ala. Geol. Surv., 1879-1880, pp. 142, 146. 1881.  
 Silurian. Alabama. Includes Nashville.
- Trenton group, Miller. Cin. Soc. Nat. Hist., Jour., vol. iv, no. 4, pp. 269, 270, 283. 1881.
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 Silurian. Pennsylvania.
- Trenton group, Linney. Ky. Geol. Surv. (Proctor), Geol. of Mercer Co., 1882.  
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 Silurian. Wisconsin. Included in Lower Silurian, Cambro-Silurian, Ordovician. Includes Hudson River, Galena, Trenton, and St. Peters.
- Trenton formation, Chamberlin. Geol. of Wis., vol. i, pp. 151-165. 1883.  
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- Trenton limestone, Winchell. Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. i, pp. 218, 289, 655. 1884.  
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- Trenton limestone, Hall. Minn. Acad. Nat. Sci., Bull., vol. iii, no. 1, pp. 113-124. 1889.  
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- Trenton limestone, Orton. Ohio Geol. Surv., 3d Organization, 1st Ann. Rept., pp. 11-14. 1890.  
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- Trenton, Smith. Ala. Geol. Surv., Rept. on Cahaba coal field, p. 152. 1890.  
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- Trenton, D'Inwilliers. 2d Pa. Geol. Surv., Rept. F<sup>4</sup>, pp. 80-82. 1891.  
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- Trenton, McGee. U. S. Geol. Surv., 11th Ann. Rept., pt. ii, p. 329. 1891.  
 Silurian. Iowa.



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- Trenton gravel, Salisbury. N. J. State Geol., Ann. Rept., 1892, pp. 106-125. 1893  
Pleistocene. New Jersey.
- Trenton, Gibson. Ala. Geol. Surv., Geol. Structure of Murphrees Valley, pp. 25, 92  
1893.  
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Lower Carboniferous. Missouri. Included in Mountain limestone. Exact syn. Second Archimides limestone.
- Warsaw limestone, Hall. Iowa Geol. Surv., vol. i, p. 97. 1858.  
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- Warsaw limestone, Worthen. Iowa Geol. Surv., vol. i, p. 192. 1858.  
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- Warsaw limestone, Hall. Albany Inst., Trans., vol. iv, pp. 2-3. 1864.  
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- Warsaw beds, Worthen. Ill. Geol. Surv., vol. v, p. 276. 1873.  
Carboniferous. Illinois. Included in St. Louis limestone.
- Warsaw limestone, Broadhead. Mo. Geol. Surv., Rept., 1873-74, p. 184. 1874.  
Carboniferous. Missouri. Included in St. Louis group.
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- Wartburg** sandstone, Keith. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 40. 1897.  
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Carboniferous. Pennsylvania. Included in Upper Barren Measures.
- Washington** County group, Lesley. 2d Pa. Geol. Surv., Rept., H<sup>3</sup>, p. xxiii, 1877.
- Washington** County group, D'Invilliers. 2d Pa. Geol. Surv., Ann. Rept., 1886, pp. 59-60. 1887.  
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- Washington** shale and sandstone, Simonds. Ark. Geol. Surv., 1888, vol. iv, pp. 75-82, 151. 1888.  
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- Washington** or High Bluff greensand, Hill. Ark. Geol. Surv., 1888, vol. ii, pp. 72-75. 1888.  
Cretaceous. Arkansas. Included in Upper Arenaceous beds.
- Washington** sandstone, White. U. S. Geol. Surv., Bull. No. 65, p. 38. 1891.  
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- Washington** limestone, White. U. S. Geol. Surv., Bull. No. 65, pp. 35-36. 1891.  
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- Washington**, Hill. Geol. Soc. Am., Bull., vol. v, p. 302. 1894.  
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- Washington** gneiss, Emerson. U. S. Geol. Surv., Mon., vol. xxix, pl. xxxiv, p. 20. 1898.  
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- Washington** gneiss, Emerson. U. S. Geol. Surv., Bull. No. 159, p. 34. 1899.  
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- Washita** limestone, Shumard. St. Louis Acad. Sci., Trans., vol. i, pp. 583, 586. 1857.  
Cretaceous. Texas.
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Cretaceous. Texas. Included in Upper Cretaceous (Lower Cretaceous, according to Marcou).

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Cretaceous. Texas. Included in Comanche series.
- Washita division, Hill. Ark. Geol. Surv., 1888, vol. ii, pp. 111-113, 179-180. 1888.  
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- Washita division, Dumble. Texas Geol. Surv., 1st Ann. Rept., pl. iii, pp. i-li. 1890.  
Cretaceous. Texas. Included in Comanche series.
- Washita division, Hill. Texas Geol. Surv., 1st Ann. Rept., pp. 126-130. 1890.  
Cretaceous. Texas. Included in Comanche series. Includes Shoal Creek limestone, Exogyra Arietna clay, Washita or Fort Worth limestone, Caprotina beds.
- Washita division, Taff. Texas Geol. Surv., 2d Ann. Rept., pp. 719-732. 1891.  
Cretaceous. Texas. Included in Lower Cretaceous. Includes Caprotina, Arietna, Malone, Etholen, Yucca Bluff, Quitman, and Mountain beds.
- Washita division, Hill. Geol. Soc. Am., Bull., vol. ii, pp. 503, 515-518. 1891.  
Cretaceous. Texas. Includes Denison beds, Fort Worth limestone, Duck Creek limestone, and Kiamitia clays.
- Washita division, Hill. Artesian Invest., Final Rept., pt. iii, p. 88, 52d Cong., 1st sess., Ex. Doc. 41, pt. iii. 1892.  
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- Washita division, Taff. Texas Geol. Surv., 3d Ann. Rept., pp. 276-277. 1892.  
Cretaceous. Texas. Includes Vola limestone, Arietna clay, Denison, and Fort Worth.
- Washita, Dumble and Cummins. Am. Geol., vol. xii, p. 310. 1893.  
Cretaceous. Texas.
- Washita division, Taff. Texas Geol. Surv., 4th Ann. Rept., pp. 262-283. 1893.  
Cretaceous. Texas. Included in Lower Cretaceous. Includes Vola limestone, Exogyra Arietina clay, Fort Worth limestone, and Denison marl.
- Washita stage, Dumble. Geol. Soc. Am., Bull., vol. vi, p. 377. 1895.  
Cretaceous. Texas. Included in Lower Cretaceous.
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Carboniferous. Iowa. Included in Mississippian series, Kinderhook.
- Wassonville limestone, Bain. Iowa Geol. Surv., vol. v, p. 134. 1896.  
Carboniferous. Iowa. Included in Kinderhook.
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New York.
- Water lime, Vanuxem. N. Y. Geol. Surv., 3d Ann. Rept., pp. 272-274. 1839.  
Silurian. New York.
- Water-lime series, Hall. N. Y. Geol. Surv., 3d Ann. Rept., pp. 292, 306. 1839.  
Silurian. New York.
- Water-lime group, Vanuxem. Geol. of N. Y., pt. iii, pp. 110-116. 1842.  
Paleozoic. New York. Included in New York system. Includes Water-lime group, Hydraulic limerock. Part. syn. No. vi, Pennsylvania Survey.
- Water-lime group, Mather. Geol. of N. Y., pt. i, pp. 349-352. 1843.  
Paleozoic. New York. Included in Helderberg division. Includes Hydraulic limestone, No. vi, Rogers.
- Water-lime group, Hall. Geol. of N. Y., pt. iv, 4th Geol. Dist., pp. 18, 141-143. 1843.  
Paleozoic. New York. Includes Water-lime group, Water-lime rock (?). Tentaculite limestone.
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Silurian. New Jersey.

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Silurian. Ohio.
- Water lime, Newberry. Ohio Geol. Surv., vol. i, pt. i, p. 135. 1873.  
Silurian. Ohio.
- Water lime, Newberry. Ohio Geol. Surv., vol. ii, p. 193. 1874.  
Silurian. Ohio.
- Water lime, Winchell. Ohio Geol. Surv., vol. ii, pp. 230, 301, 317, 329, 374, 388, 399.  
1874.  
Silurian. Ohio.
- Water lime, Ashburner. Am. Phil. Soc. Proc., vol. xvi, pp. 530, 555. 1877.  
Silurian. Appalachian region. Exact syn. Scalent.
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- Water lime group, Tiffany. Sci., vol. ii, p. 323. 1883.  
Silurian. Iowa.
- Water lime, Tiffany. Am. Assoc. Adv. Sci., Proc., vol. xxxii, p. 246. 1884.  
Silurian. Iowa.
- Water lime group, Hopkins. Ark. Geol. Surv., 1890, vol. iv, p. 52. 1890.  
Silurian. Arkansas. Included in Silurian group. Part syn. Lower Helderberg.
- Water lime formation, Luther. N. Y. State Geol., 16th Ann. Rept., p. 211. 1899.  
Silurian. New York.
- Waterloo** quartzite, Chamberlin. Geol. of Wis., vol. ii, pp. 252-256. 1877.  
Archean. Wisconsin.
- Waterville** slates, Hitchcock. Rept. on Geol. of Maine, 1861, p. 232. 1861.  
Lower Silurian.
- Watts Creek** bed, Drake. Texas Geol. Surv., 4th Ann. Rept., p. 419. 1893.  
Carboniferous. Texas. Included in Cisco division.
- Waukesha** beds, Chamberlin. Geol. of Wis., vol. ii, pp. 357-360. 1877.  
Upper Silurian. Wisconsin. Included in Niagara.
- Waukesha beds, Chamberlin. Geol. of Wis., vol. i, p. 187. 1883.  
Silurian. Wisconsin. Included in Niagara.
- Waverly** sandstone series, Mather. Am. Jour. Sci., 1st ser., vol. xxxiv, p. 356.  
1838.  
Ohio.
- Waverly sandstone series, Briggs. Ohio Geol. Surv., 1st Ann. Rept., by W. W. Mather, p. 79. 1838.  
Carboniferous. Ohio.
- Waverly sandstone, Owen. Geol. Recon. Indiana, 2d Rept., 1838, pp. 37, 44. 1839.
- Waverly rock, Owen. Geol. Recon. Indiana, Rept., 1838, pt. ii, p. 59. 1859.  
Carboniferous. Ohio. Exact syn. Soft freestone of the knobs (Knob-stone group) of Indiana.
- Waverly group, Newberry. Ohio Geol. Surv., Rept. Prog., 1869, p. 28. 1870.  
Carboniferous. Ohio. Includes Cuyahoga shale, Berea grit, Bedford shale, and Cleveland shale.
- Waverly sandstone, Newberry. Ohio Geol. Surv., Rept. Prog., 1869, p. 21. 1870.  
Carboniferous. Ohio.
- Waverly black slate, Andrews. Ohio Geol. Surv., Rept. Prog., 1869, p. 66. 1870.  
Ohio.
- Waverly sandstones, Andrews. Ohio Geol. Surv., Rept. Prog., 1869, pp. 61, 65.  
1870.  
Ohio.
- Waverly Sandstone group, Andrews. Ohio Geol. Surv., Rept. Prog., 1870, p. 59.  
1871.  
Ohio.

- Waverly sandstone, Andrews. Ohio Geol. Surv., Rept., 1869, p. 67. 1871.  
Ohio.
- Waverly group, Read. Ohio Geol. Surv., Rept. Prog., 1870, p. 474. 1871.  
Ohio.
- Waverly group, Newberry. Ohio Geol. Surv., Rept., 1869, p. 21. 1871.  
Carboniferous. Ohio. Includes Cuyahoga shale, Berea grit, Bedford shale, and Cleveland shale.
- Waverly, Andrews. Ohio Geol. Surv., vol. i, pt. i, p. 345. 1873.  
Carboniferous. Ohio.
- Waverly, Newberry. Ohio Geol. Surv., vol. i, pt. i, pp. 185, 208. 1873.  
Carboniferous. Ohio. Includes Cuyahoga shale, Berea grit, and Bedford and Cleveland shales.
- Waverly, Newberry. Ohio Geol. Surv., vol. ii, pp. 84-99. 1874.  
Carboniferous. Ohio. Included in Lower Carboniferous. Includes Cuyahoga shale, Berea grit, Bedford shale and Cleveland shale.
- Waverly, Andrews. Ohio Geol. Surv., vol. ii, pp. 589, 593. 1874.  
Carboniferous. Ohio.
- Waverly, Orton. Ohio Geol. Surv., vol. ii, pp. 618, 648. 1874.  
Carboniferous. Ohio. Included in Subcarboniferous.
- Waverly group, Rominger. Mich. Geol. Surv., vol. iii, pt. i, p. 69. 1876.  
Carboniferous. Michigan. Includes Winchells, Marshall group, and part of his Huron group. Exact syn. Waverly group of Ohio.
- Waverly, Shaler. Ky. Geol. Surv., new ser., vol. iii, pp. 175-178. 1877.  
Carboniferous. Kentucky. Exact syn. Siliceous group.
- Waverly group, Hicks. Am. Jour. Sci., 3d ser., vol. xvi, pp. 216-224. 1878.  
Carboniferous. Ohio. Includes Licking shales, Black Hand conglomerate, Granville beds, Raccoon shales, Sunbury slate, etc.
- Waverly conglomerate, Read. Ohio Geol. Surv., vol. iii, pp. 317, 337, 523, 545, 816. 1878.  
Carboniferous. Ohio.
- Waverly, Hodge. Ohio Geol. Surv., vol. iii, p. 564. 1878.  
Carboniferous. Ohio.
- Waverly, Orton. Ohio Geol. Surv., vol. iii, p. 58. 1878.  
Carboniferous. Ohio.
- Waverly, Newberry. Ohio Geol. Surv., vol. iii, pp. 19, 763. 1878.  
Carboniferous. Ohio.
- Waverly, Orton. Am. Jour. Sci., 3d ser., vol. xviii, pp. 138-139. 1879.  
Carboniferous. Ohio.
- Waverly, Orton. Am. Assoc. Adv. Sci., Proc., vol. xxx, pp. 167-174. 1882.  
Carboniferous. Ohio. Included in Subcarboniferous. Includes Bedford shale, Berea grit, Berea shale=Waverly black shale, Cuyahoga shale, Logan group, and Maxville limestone.
- Waverly, Hall. Am. Assoc. Adv. Sci., Proc., vol. xxxiii, pt. ii, p. 419. 1885.  
Carboniferous. New York and Pennsylvania.
- Waverly series, Orton. Ohio Geol. Surv., Prelim. Rept. Petroleum and Inflammable Gas, p. 24. 1886.  
Ohio. Includes Logan series, Cuyahoga shale, Berea shale, Berea grit, and Bedford shale.
- Waverly group, Herrick. Denison Univ. Sci. Lab., Bull., vol. ii, p. 7. 1887.  
Ohio.
- Waverly group, Orton. Ohio Geol. Surv., Rept., vol. vi, pp. 3, 33. 1888.  
Carboniferous. Ohio. Includes Logan group, Cuyahoga shale, Berea shale, Berea grit, and Bedford shale.
- Waverly group, Herrick. Denison Univ. Sci. Lab., Bull., vol. iii, pp. 13, 23, 101. 1888.  
Ohio.



- Waverly group, Herrick. Denison Univ. Sci. Lab., Bull., vol. iv, p. 97. 1888.  
Ohio. Includes Cuyahoga or Waverly series, and Berea or Transition series.
- Waverly shale, Herrick. Denison Univ. Sci. Lab., Bull., vol. iv, p. 106. 1888.  
Ohio. Included in Berea or Transition series.
- Waverly group, Miller. N. A. Geol. and Pal., p. 68. 1889.
- Waverly, Herrick. Am. Geol., vol. iii, pp. 94-99. 1889.  
Carboniferous. Ohio. Includes Subcarboniferous limestone (Burlington and Keokuk), Kinderhook, and Chemung in part.
- Waverly, Vogdes. N. Y. Acad. Sci., Annals, vol. iv, p. 71. 1889.  
Carboniferous. Mississippi Valley. Includes Chouteau limestones and Vernicular sandstone. Exact syn. Kinderhook group.
- Waverly group, Cooper. Denison Univ. Sci. Lab., Bull., vol. v, p. 24. 1890.  
Ohio. Includes Bedford shale, Berea grit, Lower Berea shale, Cuyahoga shale, etc.
- Waverly group, Orton. Ohio Geol. Surv., 3d Organization, 1st Ann. Rept., pp. 33-42. 1890.  
Carboniferous. Ohio. Includes Bedford shale, Berea grit and shale, Cuyahoga shale, and Logan group.
- Waverly, Williams. U. S. Geol. Surv., Bull. No. 80, p. 173. 1891.  
Carboniferous.
- Waverly shale and sandstone, Sullivan. Ky. Geol. Surv. (Proctor), Geol. of Jackson and Rockcastle Cos., 1891.  
Carboniferous. Kentucky.
- Waverly group, Orton. Ohio. Geol. Surv., vol. vii, pp. 4, 26. 1893. Includes Logan group, Cuyahoga shale, Berea shale, Berea grit, and Bedford shale.  
Carboniferous. Ohio.
- Waverly, Lesley. 2d Pa. Geol. Surv., Final Rept., vol. iii, pt. i, pp. 1779-1789. 1895.  
Carboniferous. Pennsylvania. Included in No. x, Pocono.
- Waverly shale, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folios Nos. 46, 47. 1898.  
Carboniferous. Kentucky. Included in Mississippian series.
- Waverly formation, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 53. 1899.  
Carboniferous. Tennessee. Included in Mississippian series. Part. syn. Fort Payne chert.
- Waverly group, Weller. St. Louis Acad. Sci., Trans., vol. ix, p. 49. 1899.  
Carboniferous. Ohio.
- Waynesburg** limestone, D'Invilliers. 2d Pa. Geol. Surv., Ann. Rept., 1886, pp. 71-73. 1887.  
Carboniferous. Pennsylvania. Included in Upper Productive Measures.
- Waynesburg sandstone, Lovejoy. Ohio Geol. Surv., vol. vi, pp. 627, 635. 1888.  
Carboniferous. Ohio.
- Waynesburg sandstone, White. U. S. Geol. Surv., Bull. No. 65, p. 40. 1891.  
Carboniferous. Pennsylvania, West Virginia. Included in Permo-Carboniferous, Dunkard Creek series.
- Waynesburg limestone, White. U. S. Geol. Surv., Bull. No. 65, p. 58. 1891.  
Carboniferous. Pennsylvania, West Virginia. Included in Upper Coal Measures, Monongahela River series.
- Waynesburg sandstone, White. Geol. Soc. Am., Bull., vol. iii, p. 189. 1892.  
Upper Carboniferous. West Virginia. Included in Upper Coal Measures.
- Wealden**, Uhler. Johns Hopkins Univ. Circs., No. 21, p. 53. 1883.  
Jurassic. Maryland.
- Webb Bluff**, Dumble. Geol. Soc. Am., Bull., vol. iii, p. 230. 1892.  
Tertiary. Texas. Included in Eocene.



- Webberville** formation, Hill and Vaughan. U. S. Geol. Surv., 18th Ann. Rept., pt. ii, p. 241. 1898.  
Cretaceous. Texas. Included in Montana division of Gulf series.
- Weber** quartzite, King. Am. Jour. Sci., 3d ser., vol. xi, p. 480. 1876.  
Carboniferous. Nevada.
- Weber** quartzite, Emmons. U. S. Geol. Expl. of 40th Parallel, vol. ii, p. 343 et seq. 1877.  
Carboniferous. Utah. Included in Upper Carboniferous.
- Weber** quartzite, King. U. S. Expl. of 40th Parallel, vol. i, pp. 127-248. 1878.  
Carboniferous. Utah, Nevada.
- Weber** quartzite, White. U. S. Geol. and Geog. Surv. of Terr., 10th Ann. Rept., p. 23. 1878.  
Carboniferous. Utah.
- Weber** grit, Emmons. U. S. Geol. Surv., 2d Ann. Rept., p. 219. 1882.  
Carboniferous. Colorado.
- Weber** conglomerate, Hague. U. S. Geol. Surv., 3d Ann. Rept., pp. 253, 270. 1883.  
Carboniferous. Nevada.
- Weber**, Emmons. U. S. Geol. Surv., Mon., vol. xii, p. 67. 1886.  
Carboniferous. Colorado.
- Weber** conglomerate, Hague. U. S. Geol. Surv., Mon., vol. xx, p. 91. 1892.  
Carboniferous. Nevada.
- Weber**, Eldridge. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 9. 1894.  
Carboniferous. Colorado.
- Weber** formation, Emmons. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 48. 1898.  
Carboniferous. Colorado.
- Weber** formation, Spurr. U. S. Geol. Surv., Mon., vol. xxxi, pp. 30-33. 1898.  
Carboniferous. Colorado.
- Weisner** quartzite, Hayes. Geol. Soc. Am., Bull., vol. ii, p. 143. 1890.  
Cambrian (?). Tennessee. Part. syn. Chilhowee (?).
- Weisner** quartzite, Smith. Ala. Geol. Surv., Rept. on Cahaba coal field, p. 149. 1890.  
Cambrian. Alabama.
- Weisner**, Walcott. U. S. Geol. Surv., Bull. No. 81, p. 251. 1891.  
Cambrian. Appalachian region.
- Weisner** formation, Hayes. Geol. Soc. Am., Bull., vol. v, p. 468. 1894.  
Cambrian. Georgia.
- Weisner** sandstone, McCalley. Ala. Geol. Surv., Rept. on Valley regions, pt. ii, pp. 38-39, 484, 509-512, 542-575, 674-692, 754-765, 815-817. 1897.  
Cambrian. Alabama. Exact syn. Chilhowee sandstone.
- Welch** formation, Campbell. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 44. 1897.  
Carboniferous. Virginia, West Virginia. Part. syns. No. xii, Great Conglomerate of Rogers.
- Well** rock series, Swallow. Kan. Geol. Surv., Prelim. Rept., pp. 21-22, 47. 1866.  
Carboniferous. Kansas.
- Wellesley** formation, Brooks. U. S. Geol. Surv., 20th Ann. Rept., pt. vii, pp. 470-472, 479. 1900.  
Devonian or Carboniferous. Alaska.
- Wellington** shale, Cragin. Washburn Coll. Lab. Nat. Hist., Bull., vol. i, No. 3, pp. 85-86. 1885.  
Pleistocene. Kansas. Exact syn. Champlain.
- Wellington** shale, Cragin. Kansas City Rev., vol. viii, pp. 678-682. 1885.  
Pleistocene. Kansas. Exact syn. Champlain.

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- Williamstown** granite, Emerson. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 50. 1898. Carboniferous. Massachusetts.
- Wolff** porphyry, Weed. U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 55. 1899. Montana.
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Coralline.	Delphi.	Elk Mountain.
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Corral.	Denver.	Ellicottsville.
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Cortlandt.	Diablo-Davis.	Ellis.
Coryphoden.	Diamond Peak.	Elm Creek.
Cottonwood.	Dinosaur.	Elmont.
Cottonwood Creek.	Dismal.	Empire.
Cottonwood Falls.	Dockum.	Emporia.
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Coutchiching.	Dolores.	Encrinital.

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| Eolian.            | Forbes.         | Genesee.        |
| Equing.            | Foreman.        | Geneva.         |
| Equus.             | Forest.         | Genevieve.      |
| Erian.             | Forest City.    | Gentile Valley. |
| Erie.              | Fort Benton.    | Geode.          |
| Eryops.            | Fort Bridger.   | George River.   |
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| Estuary.           | Fort Knox.      | Geuda.          |
| Etcheminian.       | Fort Payne.     | Giles.          |
| Etholen.           | Fort Pierre.    | Gillespie.      |
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| Falls River.       | Fourth Moraine. | Glen Rose.      |
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| Farnham.           | Fox Hills.      | Glens Falls.    |
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| Fayetteville.      | Franciscan.     | Golconda.       |
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| Felch Mountain.    | Frankenfield.   | Golden Wall.    |
| Fence-post.        | Frankford.      | Goniatite.      |
| Fernandan.         | Frankfort.      | Goodland.       |
| Ferriferous.       | Franklin.       | Goodnight.      |
| Ferruginous.       | Fredericksburg. | Goodrich.       |
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| Fish House.        | Freeport.       | Goshen.         |
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| Flagstone.         | Frio.           | Granby.         |
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| Flathead.          | Fusulina.       | Grand Prairie.  |
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| Floyd.             | Garrard.        | Grassy Creek.   |
| Folley.            | Gary.           | Gravel.         |
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Graydon.	Harlan.	Hopewell.
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Mount Sand.	Newport.	Oneonta.
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Naknek.	Nisconleth.	Orbitoitic.
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Nanaimo.	Nolichucky.	Orchard.
Naparima.	Noix.	Oread.
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Napoleon.	Normandy.	Oriskany.
Nariva.	Norristown.	Orthaulax.
Nashaquitsa.	North Denison.	Orting.
Nashville.	North Park.	Osage.
Nasina.	North Valley Hill.	Osage City.

Osborne.	Pella.	Plymouth.
Osceola.	Pelodian.	Pocahontas.
Osgood.	Pemigewasset.	Pochuck.
Ostrea sellaeformis.	Pendleton.	Pocono.
Oswegatchie.	Pennian.	Pogonip.
Oswegan.	Pennington.	Point aux Gres.
Oswego.	Pennsylvania.	Point of Rocks.
Ottawa.	Penokee.	Point Pleasant.
Otis.	Penokee-Gogebic.	Pointe Levis.
Otter.	Pensauken.	Poison Canyon.
Otter Creek.	Pentacrimus.	Pokegama.
Otterdale.	Pentamerua.	Polk Bayou.
Ouray.	Pentremital.	Polk County.
Oxmoor.	Peorian.	Pomeroy.
Ozark.	Pepino.	Ponderosa.
Ozarkian.	Pequawket.	Pondville.
Packer.	Perkasie.	Ponent.
Packsaddle.	Perry.	Pope Hollow.
Paine.	Peru.	Porcupine.
Paint Rock.	Pescadero.	Porphyrian.
Palisades.	Pewabic.	Port Hudson.
Palmer.	Phelps.	Portage.
Palo Duro.	Philadelphia.	Porters Creek.
Paluxy.	Phillipsburg.	Portland.
Pamunkey.	Phipsburg.	Porus.
Panama.	Pickens.	Postmedidial.
Panola.	Pictou.	Postmeridian.
Panther Creek.	Pictured Cliff.	Poteau.
Para.	Piedmont.	Potomac.
Parian.	Pierce.	Potosi.
Park.	Pierre.	Potsdam.
Parks Mountain.	Pigeon.	Pottawatomie.
Parma.	Pilgrim.	Potters.
Parting.	Pilot Knob.	Pottery.
Parkville.	Pine Creek.	Pottstown.
Pascagoula.	Pine Mountain.	Pottsville.
Paskapoo.	Pink Cliff.	Poughquag.
Paso Robles.	Pinnacle.	Powelson.
Patapsco.	Pinon.	Poxono Island.
Patoot.	Pinon Mesa.	Prairie Bluff.
Patuxent.	Pinto.	Prairie d'Ane.
Paupack.	Pipestone.	Premedidial.
Paw Paw.	Piscataway.	Pre-Meridian
Pawhuski.	Pithole.	Preston.
Pawnee.	Pitt.	Price.
Pawtucket.	Pittsburg.	Primal.
Payette.	Plant.	Princeton.
Peace Creek.	Plateau.	Procamelus.
Peach Bottom.	Platte.	Proctor.
Pearl River.	Plattsburgh.	Productal.
Pearlette.	Plattsmouth.	Productive.
Pedee.	Pleasanton.	Prospect Mountain.
Pelham.	Pleurocoelus.	Protean.
Pelican.	Plihippus.	Protoceras.

Pteranodon.  
Puckwunge  
Puerco.  
Puget.  
Pulaski.  
Pulliam.  
Purgaton.  
Putnam Hill.  
Putnamville.  
Puyallup.  
Quadrant.  
Quakertown.  
Quarry Creek.  
Quartz rock.  
Quartz slate.  
Quebec.  
Queen Charlotte.  
Queen City.  
Queens River.  
Quesnel Lake.  
Quesnel River.  
Quinnemont.  
Quinnesec.  
Quitman.  
Quitman-Muerto.  
Raccoon.  
Racine.  
Radiolarian.  
Rainy Mountain.  
Raleigh.  
Ranpart.  
Rancocas.  
Random.  
Randville.  
Rapids.  
Rappahannock.  
Raritan.  
Reading.  
Receptaculites.  
Red.  
Red Bluff.  
Red Creek.  
Red Mountain.  
Red River.  
Red sand rock.  
Red Wall.  
Redbank.  
Redrock.  
Redstone.  
Reeder.  
Relief.  
Rensselaer.  
Republic.  
Requienia.

Reynosa.  
Rhomboidal.  
Riceville.  
Richland.  
Richmond.  
Richmond-Gordon.  
Richmondville.  
Ricker.  
Rico.  
Ridley.  
Riga.  
Riley.  
Ripley.  
Riversdale.  
Riverside.  
Robinett.  
Robinson.  
Rochdale.  
Roche Percee.  
Rochelle.  
Rock Creek.  
Rock Falls.  
Rockcastle.  
Rockford.  
Rockingham.  
Rockmart.  
Rockville.  
Rockwood.  
Rocky Comfort.  
Rogersville.  
Rome.  
Romney.  
Rondout.  
Rose Island.  
Roslyn.  
Rossville.  
Rotten.  
Roubidoux.  
Rough Creek.  
Rowe.  
Roxbury.  
Royal.  
Ruby.  
Rushville.  
Russell.  
Russellville.  
Rutledge.  
Sabine River.  
Sac.  
Saccharoidal.  
Sachuest.  
Sacramento.  
Saddle Creek.  
Sailor Canyon.

St. Albans.  
St. Anthony.  
St. Clair.  
St. Croix.  
St. Elias.  
St. Francois.  
St. Genevieve.  
St. Jean.  
St. Joe.  
St. John.  
St. Joseph.  
St. Lawrence.  
St. Louis.  
St. Marys.  
St. Stephens.  
St. Peters.  
St. Thomas.  
Salamanca.  
Salem.  
Salida.  
Saliferous.  
Salina.  
Salmon River.  
Salt Creek.  
Salt Fork.  
Salt Lake.  
Salt Plain.  
Salt Wells.  
Saltsburg.  
San Diego.  
San Francisco.  
San Miguel.  
San Pablo.  
San Pedro.  
San Saba.  
Sangamon.  
Sand Hill.  
Sand Mountain.  
Sandpond.  
Sandstone.  
Sandsuck.  
Sandusky.  
Sankaty.  
Santa Anna.  
Santa Clara.  
Santa Cruz.  
Santa Fe.  
Santee.  
Saskatchewan.  
Sassafras River.  
Saugeen.  
Sault St. Mary.  
Savage.  
Savanna.

Savoy.	Shunganunga.	Stellarton.
Sawatch.	Shushitna.	Stockbridge.
Saxicava.	Shuswap.	Stockton.
Scalent.	Siamo.	Stockwether.
Schoharie.	Siderian.	Stokes.
Schooner Head.	Signal Hill.	Stones River.
Schreyfogels.	Silicious.	Stony Brook.
Scioto.	Sillery.	Stormville.
Scott.	Silver Lake.	Strawn.
Scotts Creek.	Silveria.	Strong.
Scutella.	Simelkameen.	Stuntz.
Sea Urchin.	Simmons Bluff.	Sturgeon.
Sebastian.	Sioux.	Styliolina.
Secret Canyon.	Skaneateles.	Subconglomerate.
Sedalia.	Skunnemunk.	Sucarnochee.
Selinsgrove.	Skwentna.	Sugarloaf.
Selkirk.	Smalls Brook.	Suisure.
Sellersburg.	Smelt Brook.	Sukonk.
Seneca.	Smith River.	Sulphur.
Senecan.	Smithfield.	Summit.
Sequoyah.	Smoky Hill.	Sumner.
Seral.	Smoky River.	Sunbury.
Sespe.	Sneedville.	Sundance.
Setters.	Snyder Creek.	Sunrise.
Severn.	Sockanosset.	Superjacent.
Severy.	Soldier Creek.	Surgent.
Sevier.	Sooke.	Suttons Island.
Sewanee.	Sopchophy.	Swallow.
Sewell.	South Carrolton.	Swanton.
Sewickley.	South Mountain.	Swauk.
Seymour.	South Valley Hill.	Swearinger.
Shadrick Mill.	Spadra.	Sweetland.
Shakopee.	Sparry.	Sweetwater.
Shark River.	Sparta.	Swift Water.
Sharon.	Speck Mountain.	Sylamon.
Sharpsville.	Sphinx.	Sylamore.
Shasta.	Spirifera pennata.	Sylvania.
Shasta-Chico.	Spokane.	Syntrialasina.
Shawangunk.	Spring Creek.	Syrtensian.
Shawnee.	Spring River.	Tachatna.
Shelby.	Spring Rock.	Taconic.
Shelbyville.	Springfield.	Tacoynte.
Shell Bluff.	Springvale.	Tahkandit.
Shenandoah.	Squanjum.	Talcoid.
Shenango.	Stafford.	Talcose.
Sherburne.	Stamford.	Talladega.
Sheridan.	Stanford.	Tallahatta.
Shiloh.	Stanton.	Taloga.
Shimer.	Star Peak.	Talpa.
Shinarump.	Starr.	Tamana.
Shinersville.	Starueca.	Tampa.
Shirley.	State Quarry.	Tanana.
Shoal Creek.	Steep Rock.	Tar.
Shoo Fly.	Steilacoom.	Tar Spring.



Tassagara.	Torregan.	Valley Spring.
Taunton.	Towanda.	Valparaiso.
Taylor.	Tower.	Van Wert.
Taylor's Ridge.	Trail.	Vancouver.
Taylor'sville.	Tranquille.	Vanport.
Teay.	Trap Tuff.	Vashon.
Tecumseh.	Trappean.	Venango.
Tehachipa.	Traverse.	Ventura.
Tehuelche.	Travis Peak.	Verdi.
Tejon.	Trego.	Vergent.
Tellico.	Trenton.	Vermilion.
Tellowa.	Trincheras.	Vermont.
Temple Butte.	Trinidad.	Vernicular.
Tenmile River.	Trinity.	Vespertine.
Tentaculite.	Trough Creek.	Vicarya.
Terra Cotta.	Truckee.	Vicksburg.
Terrace.	Truro.	Vicksburgian.
Terranovan.	Tuckahoe.	Victoria.
Teton.	Tucumcari.	Vilas.
Texan.	Tule.	Vinal Haven.
Texana.	Tully.	Vincentown.
Texanan.	Tuna.	Vineyard.
Texian.	Tunnel Point.	Vinita.
Thayer.	Tu-nunk.	Virginian.
Thebes.	Tusahoma.	Vishnu.
Thessalon.	Tuscaloosa.	Vola.
Third Moraine.	Tuscan.	Volcan.
Thomas Hill.	Tuscarora.	Vulcan.
Thompson.	Tuscumbia.	Wabaunsee.
Three Forks.	Twelvemile.	Waccamaw.
Thunder Bay.	Tymochtee.	Wahsatch.
Thunderhead.	Tyonek.	Wakarusa.
Thurman.	Tyre.	Walden.
Ticholeptus.	Tyringham.	Waldo.
Timber Belt.	Uinta.	Waldrip.
Timber Creek.	Ulsterian.	Waldron.
Timpas.	Umbral.	Walker Block.
Tintic.	Umpqua.	Wallala.
Tionesta.	Unga.	Wallkill.
Tisbury.	Unicoi.	Walnut.
Titanotherium.	Union.	Wamsutta.
Tiverton.	Uniontown.	Wapiti.
Todos Santos.	Unionville.	Wappinger Valley.
Togiak.	Unkar.	Wapsipinicon.
Tok.	Unkpaps.	Warren.
Tolenas.	Upshur.	Warrensburg.
Tolleston.	Upson.	Warsaw.
Tombigbee.	Ute.	Wartburg.
Tomlinson.	Utica.	Washakie.
Tonto.	Uvalde.	Washburn.
Topeka.	Val Verde.	Washington.
Torbay.	Valdes.	Washington County.
Tordrillo.	Valera Bend.	Washita.
Toronto.	Valley.	Wassonville.

Waswangoning.	White Oak Mountain.	Wolf Creek.
Waterline.	White Pine.	Wood River.
Waterloo.	White Prairie d'Ane.	Woodbridge.
Waterville.	White River.	Woodbury.
Watts Creek.	Whitmores Ferry.	Woodhurst.
Waukesha.	Whitsett.	Woods Bluff.
Waverly.	Wichita.	Woodstock.
Waynesburg.	Wilbarger Creek.	Woodville.
Webb Bluff.	Wilbur.	Worcester.
Webberville.	Wildcat.	Wreford.
Weber.	Wildcat Mountain.	Wyckoff.
Weisner.	Wilhite.	Wykoff.
Welch.	Willard.	Wyman.
Well Rock.	Williamsport.	Wyo.
Wellesley.	Willow Creek.	Wyoming.
Wellington.	Willow River.	Wyoming Valley.
West Elk.	Wills Point.	Yakutat.
West Fork.	Wilmington.	Yallahs.
West Franklin.	Wiltons Run.	Yarmouth.
West Jefferson.	Winchester.	Yegua.
West Union.	Wind River.	Yellow.
Western.	Windsor.	Yellowstone.
Western Valley.	Windy Gap.	Yentna.
Westerville.	Winfield.	Yogo.
Westfield.	Wingate.	Yonkers.
Weston.	Winnipeg.	York.
Weverton.	Winnipegosan.	Yucca.
Wewe.	Winnipesaukee.	Yukon.
Weyquosque.	Winooski.	Yule.
Whateley.	Winterset.	Zapata.
White.	Winthrop.	Zeuglodon.
White Bluff.	Wisconsin.	Zoar.
White Mountain.	Wise.	Zuni.









